OCT. 31 1958

PETROLEUM WEEK

A McGRAW-HILL PUBLICATION

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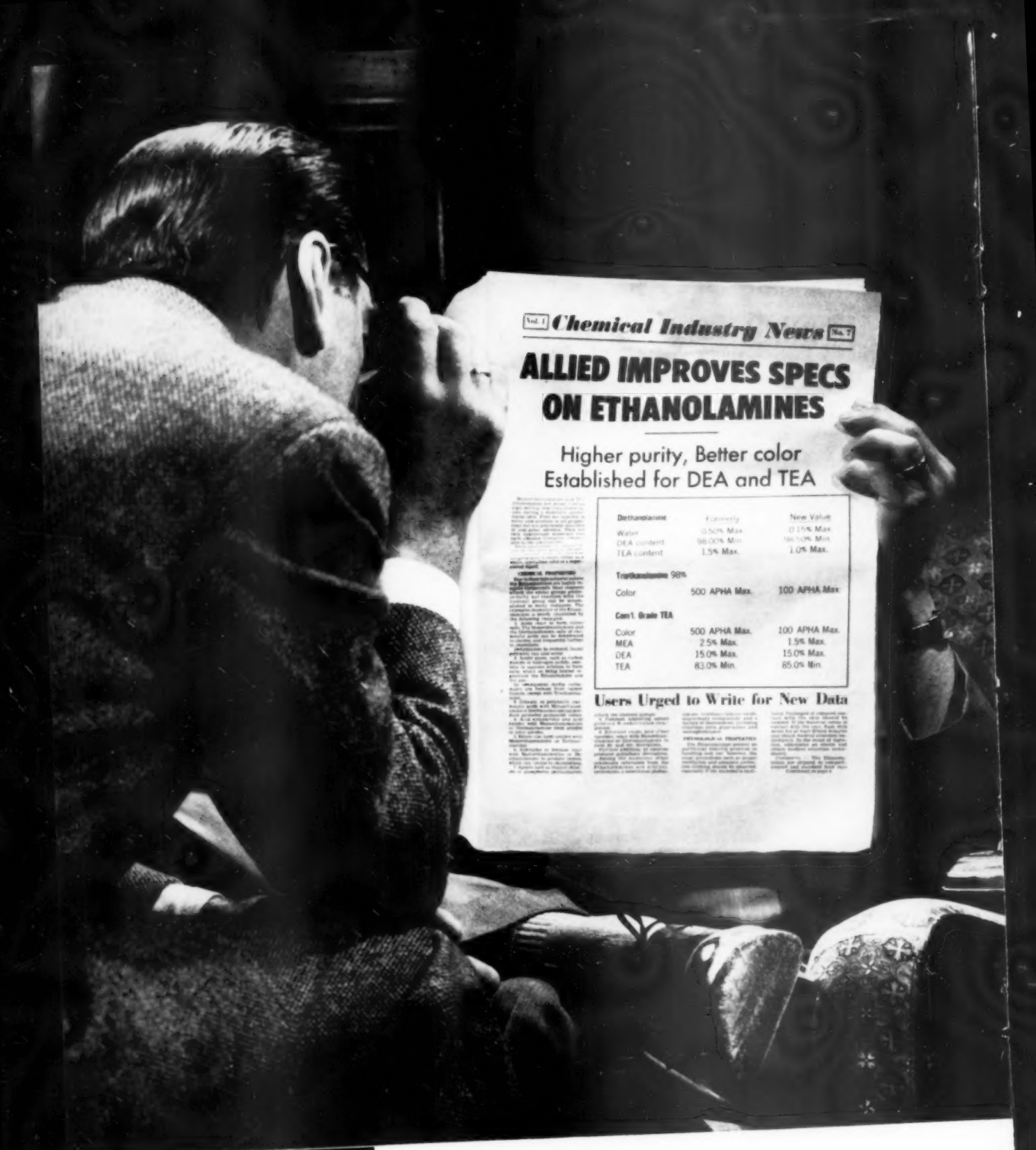

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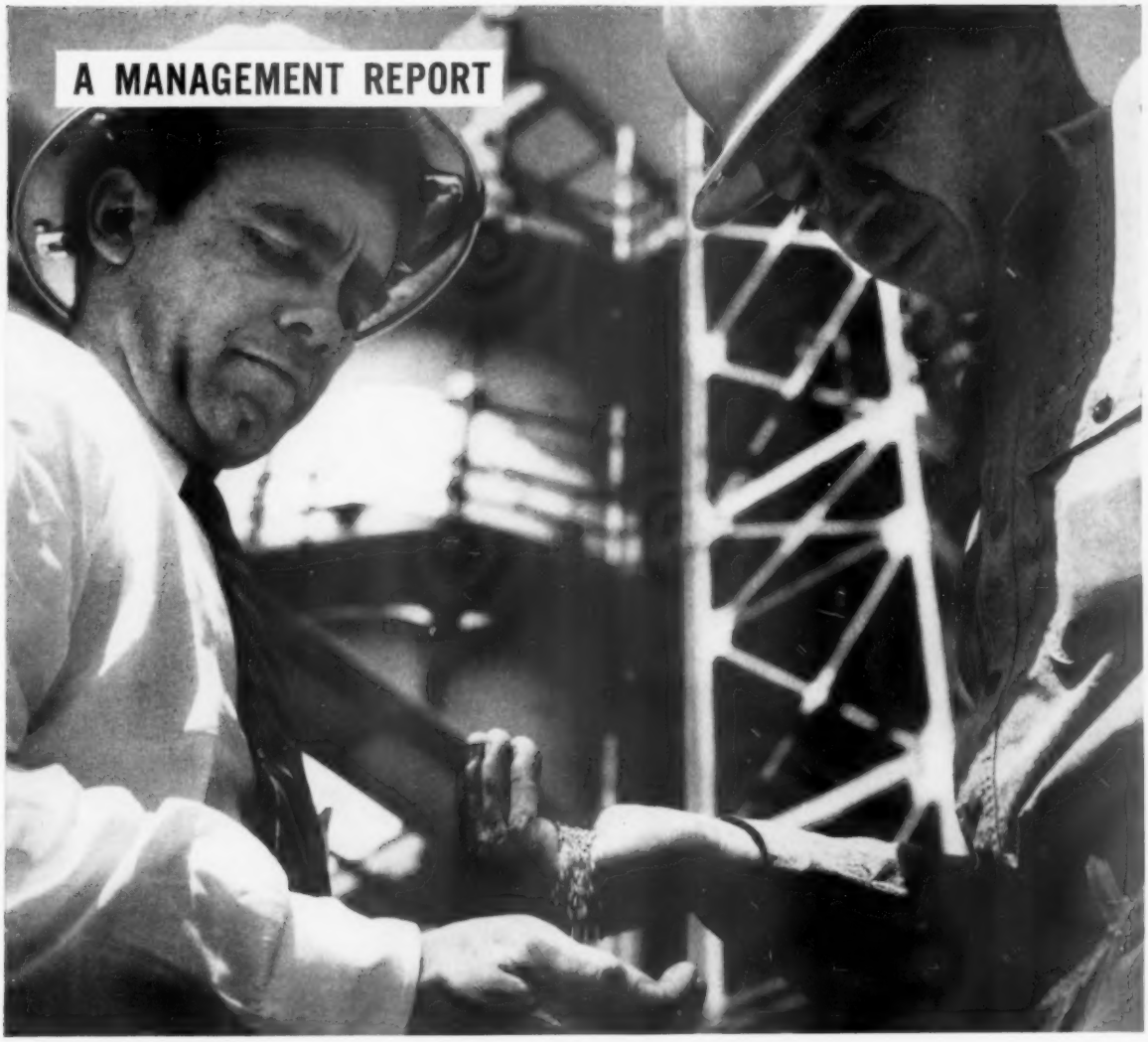

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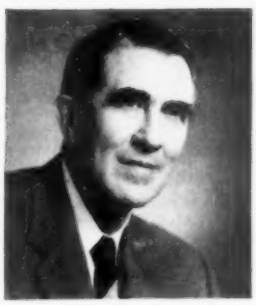

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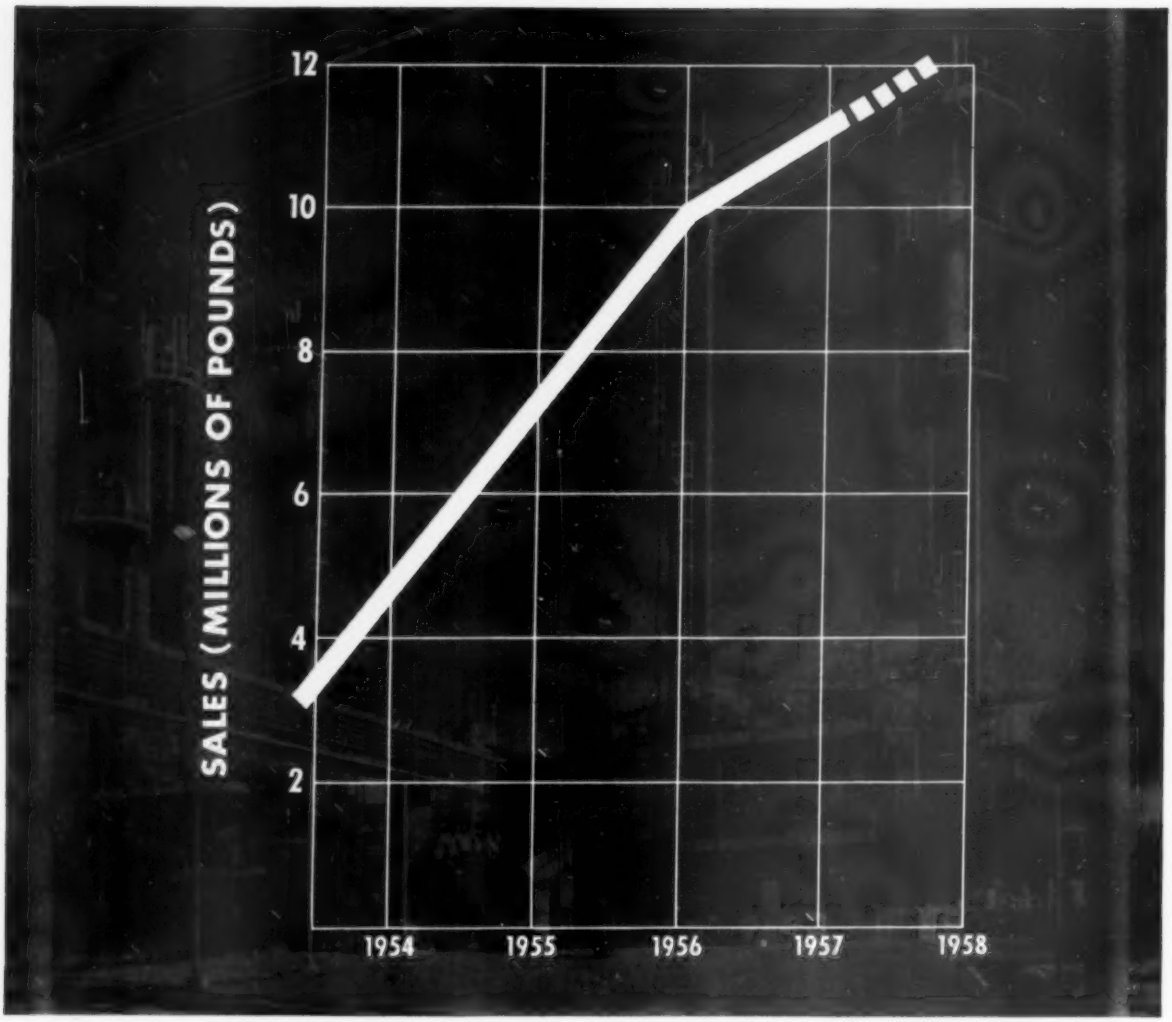

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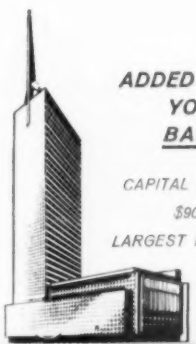

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Good Wells Make Good News

A Monthly Report of Successful Well Treatments

October 31, 1958

Fracturing with acid-base fluids and sand often gives better results and a quicker payout than either acidizing or fracturing alone. Here are some recent successful results:

- **Colorado County, Texas Gulf Coast.** (Old Gas Well) This well—completed through four sets of perforations into the Wilcox (8596 to 9127 feet)—had been dead four months. Dowell fractured with Acid Petrofrac*, using 16,000 gallons acid-oil emulsion and 16,000 pounds sand. Injection was down 2½-inch tubing at 5 bpm; pressure reached 5700 psi. 45 days after treatment, well was delivering 750 mcfd into 800 psi gathering line. Distillate recovery was 30 bpd. *Dowell treatment paid out in less than two months; total workover cost paid out in less than three months.*

- **Ector County, West Texas.** (New Oil Well) This well was completed in the sandy lime of the Tubbs formation. Solubility was about 85 per cent and salt content was about 0.35 pounds per cubic foot. Two sets of perforations (2 shots per foot) were made between 6168 and 6480 feet. No test was made before treatment because wells in this field require stimulation. Operator ordered Duofrac*. Dowell used 500 gallons Mud Acid to spearhead, followed by 25,000 gallons 7½ per cent acid with demulsifying agent and 25,000 pounds sand. 472 perforation ball sealers were injected in four stages of 118 each (after each 5000 gallons). Injection averaged 49 bpm at 2300 psi maximum. *Well is producing top allowable of 111 bopd.*

- **Cowley County, Kansas.** (New Oil Well) This well was completed in a cherty lime of 30 to 36 per cent solubility. Completion was through 10 feet of perforations and five feet of open hole. Total depth was 3031 feet. The operator ordered Acid Petrofrac. After cleaning up the well with 500 gallons of Mud Acid, Dowell fractured with 15,000 gallons acid-oil emulsion with FLA* (Fluid Loss Additive), and 15,000 pounds sand. Injection was down 4½-inch casing at 1650 psi and 27½ bpm. *Before treatment, production was ½ boph. After fracturing, the well swabbed 11 boph. State potential was 90 bopd with 5 per cent water.*

- **Burke County, North Dakota.** (New Oil Well) This well was completed in the Nesson lime through an 11-foot perforated section at about 6000 feet. Before treatment, well tested only a show of oil. After treatment with 250 gallons BDA* (Breakdown Acid), well swabbed one boph. Well was then fractured with Acid Petrofrac. Dowell injected 2000 gallons acid-oil emulsion with FLA (Fluid Loss Additive) and 1750 pounds sand. Injection rate was five bpm at a maximum pressure of 5800 psi. *30 days after treatment well was flowing 90 bopd.*

The selection of the most promising stimulation treatment is often the most important part of a successful job. Take full advantage of Dowell's experience in selecting the treatment best suited to your well. For service or more information, call any of the 165 Dowell service points and offices. In Canada, contact Dowell of Canada, Ltd.; in Venezuela, contact United Oilwell Service. Dowell, Tulsa 1, Oklahoma.

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60-Second Summary / WHAT'S HAPPENING IN OIL

October 31, 1958

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Sinclair and British Petroleum are joining hands for crude supply. They will market Mideast and Venezuelan oil in the Western Hemisphere and search for oil in Latin America, and BP will fill Sinclair's U.S. needs for Mideast crude. . . . p. 13

•

Despite an optimistic outlook for demand, domestic producers are worried about the future. They are most concerned over revisions to the import plan, declining crude prices, and rising costs. . . . p. 8

•

The Interior Dept. could create a big stir by throwing its weight around in oil conservation. Because it administers vast holdings in Indian lands, public lands, and offshore areas, any action similar to its shutdown order in Utah could have a big impact on state conservation practices. . . . p. 9

•

Don't look for abrupt changes in Venezuela's oil policies, even though all parties in the upcoming election there favor revisions. Indications are that the changes will be gradual, through negotiation, rather than sudden or drastic. . . . p. 28

•

Canada's Borden commission thinks gas export plans should undergo more scrutiny, especially on prices. It recommends formation of a special board to pass on interprovincial and international export applications. . . . p. 10

•

U.S. independents are moving into international markets with foreign crude. A newcomer to Venezuela is starting crude shipments to Brazil this week. . . . p. 40

•

Interest in African oil prospects aren't limited to French Africa. A vigorous hunt is under way in other areas, especially in Libya. Quite a few U. S. firms, including independents, are involved. . . . p. 11

•

Exploratory drilling in northwestern Kansas may taper off. But now that the first flurry of wildcatting is over, development drilling will continue. . . . p. 17

•

Bottomhole heaters are stimulating production of heavy crudes in California. Tidewater's experience in the Kern River field shows an almost 500% increase in crude production there. . . . p. 19

•

Rubberized asphalt may stage a comeback. Once a failure, the paving material is making another try in a new dress—a synthetic polymer for asphalt. . . . p. 24

Up to the Minute / SIGNIFICANT LATE NEWS

AT-A-GLANCE PETROLEUM WEEK Copyright

October 31, 1958

Oil company profits in the third quarter generally moved ahead of 1957, making the first quarterly gain of the year. Even so, the full nine-month profits of nearly all companies reporting so far are well below both 1957 and 1956.

•

Note that Canada's Borden Commission recommends controls for crude and products as well as for natural gas (page 9). Its proposal that a board be established to issue import and export licenses apparently would give such a board mandatory control over import and export levels of both oil and gas. This could be a step toward forcing Eastern Canada's refiners to use Western Canada's crude.

Many Canadian producers aren't overly pleased with the commission's over-all recommendations. They fear that the gas proposals, for instance, would create delays during which markets would be lost.

•

Lyndon Johnson says that both importing companies and independents are guilty of seeking a favored position from government. Speaking at the IPAA meeting this week, the Texas senator said the result would be acceptance of federal domination in exchange for federal favor. He said the pie-cutting approach to imports has given "little relief."

Sen. Russell Long favors a plan to give the domestic industry a definite percentage of the domestic market, including the market for products. He told IPAA: "When we're speaking of the security of the U.S., we're not talking about the good humor of Ibn Saud or President Nasser."

•

The Texas Railroad Commission's authority to set the conditions for ratable take of gas in a given field has been upheld. The U.S. Supreme Court has dismissed the Permian Basin Pipe Line Co. case, in which the argument had been presented that such a state order conflicted with FPC control of gas moving into interstate pipelines (PW—Oct.24'58,p9). Observers consider the court's action a key victory for the Texas commission.

•

Crude imports were 55,200 b/d above allocations in September, with the excesses falling in Districts I-IV. Imports of unfinished gasoline and other unfinished oils were almost 26,000 b/d above the average for the May-June base period.

•

The Union Pacific R. R. received a setback this week in a major oil rights dispute. The Colorado Supreme Court ruled that the railroad did not retain valid mineral rights in a parcel of land it sold in 1889. Since UP and other railroads sold vast acreage in that period, a rash of suits may follow. However, the railroad's attorney points out that it used many types of reservations, and that the court's ruling applies to only one. Therefore, he says, the decision may not be as far-reaching as some observers anticipate.

MR. H. S. M. BURNS,

President and Chairman of the Executive Committee of the Board of Directors, Shell Oil Company

". . . no factor is more essential . . ."

"From exploration through marketing, the success of oil industry operations depends largely on what the military men call logistics—making sure that what you want is where you want it when you want it.

"Most of us oil men in the United States take it for granted that such matters can be easily handled. Getting supplies and equipment ordinarily involves no more than reaching for the telephone. The reason is that the suppliers do such a good job of maintaining warehouses and effecting deliveries. I suspect that many of us become so used to this that we don't appreciate it properly.

"I learnt appreciation the hard way some years ago when I was involved in developing new oil fields in nearly inaccessible tropical jungle, hundreds of miles from the comforts of civilization. We surely missed being able to handle our supply problems by the phone call treatment.

"The oil industry is complex. Its future success will depend on continued performance by all its members. And no factor is more essential or more likely to contribute to that end than the vigorous, progressive companies that supply petroleum equipment."

P.E.S.A.*

* PETROLEUM EQUIPMENT SUPPLIERS ASSOCIATION

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PETROLEUM EQUIPMENT SUPPLIERS ASSOCIATION

'Problems' Dim Producers' Outlook

Despite an optimistic forecast for demand growth next year—which would be the first significant gain since 1956—independent producers see little to cheer about for the immediate future.

Such was the tenor of the annual meeting of the Independent Petroleum Assn. of America in Dallas this week.

One of the first committee reports made to the membership—that of the Supply & Demand Committee—predicted a far brighter outlook than had been experienced in the industry in two years.

The 12-member committee, which has a reputation of being conservative in its predictions, estimated that total demand for petroleum in 1959 would average 9,657,000 b/d, up 4.3% over 1958 (table, page 9).

This anticipated gain for domestic and export demand compares with a decline of about 1.3% now expected for 1958, a gain of only 1.3% in 1957, and a gain of 4.3% in 1956.

And the rate of new supply—domestic production plus imports—needed to meet next year's demand was estimated by the committee at 9,677,000 b/d, up 5.9% over 1958.

But the independents' optimism ends there. The remainder of the meeting was concerned with the many problems facing domestic producers.

The darkest cloud on the horizon continues to be imports. The two new "worries" are that the proposed refinery-run plan may be changed, and that products imports will continue to rise.

The first worry may have some justification. For while IPAA was meeting, reports circulated in Washington that the eventual imports plan for the areas east of the Rockies may not be based on refinery runs, but may continue the emphasis on historical importing patterns.

Reportedly, high Administration officials are considering a plan that would allocate 80% of the total permissible crude imports to individual refineries in proportion to their actual use of foreign crude over a preceding three-year period.

Such a proposal, which could not be confirmed, would be along the lines of a suggestion made to Matthew V. Carson, the imports administrator, by Atlantic Refining Co.

Generally, the proposal, which could be adopted early in November, would reserve the remaining 20% of the import allocation to refineries requesting imported oil. "Quotas" would be given to refineries—not to companies. Allocations would not be transferable, and would have to be used in the plants requesting them.

Such a plan would represent a complete switch from the program originally drawn up by Carson and submitted to the industry for comments. That plan would assign crude and un-

Some Imports Views at IPAA

- "Some companies take the position that it is the government's function to preserve to them an inviolate, preferred position in the market place . . . I favor the refinery run method. I do not favor a closed shop in the import business in favor of a few. In the last analysis, however, independent producers in the domestic industry are interested only in one type of control system—that is the effective type. The mechanics of limiting imports are secondary."

  PAUL R. SCHULTZ, BLACKWELL OIL & GAS CO.

- ***"The proposed [Carson] plan provides for the control of imports of the important commodities—crude and unfinished oils—under a just formula. It is on a voluntary, rather than mandatory, basis. There are, of course, certain features of the proposal which should be clarified. However, the basic principles are sound . . ."***

  GEORGE V. MYERS, INDIANA STANDARD

- We are for any plan which will successfully limit the imports of crude and products into this country . . . If [Carson] puts his plan into effect, the domestic industry will be pulling hard for its success. However, without many basic changes, it cannot succeed . . . Any plan without a means of forcing compliance is doomed to failure . . . I think most independents will agree that the approach set out in the Ikard bill is the best plan yet devised to bring about successful curtailment of imports."

  LESTER CLARK, IBEX CO.

- ***Any import plan that promises maximum economic protection to the entire industry cannot allow competitive advantage to a few, such as has been the case under the existing program . . . I can conceive of no plan that is more equitable than one based on allocation of imported crude in proportion to domestic refinery runs."***

  JOHN M. HUTCHIN, PHILLIPS PETROLEUM

- "I am heartily in favor of the [Carson] plan with modifications . . . In considering the decline in the rate of production, we came to the conclusion that imports are the primary cause. The independent is finding it wiser to sell out than to retain his properties. About 80% of our business today is in financing sell-outs, rather than financing the development of oil fields."

  RUSHTON AUDREY, REPUBLIC NATIONAL BANK OF DALLAS

Even Though Demand Is Increasing

finished oil imports to companies with refining capacity, based on a proportion of refinery runs (PW—Sep.12'58, p11).

The independents were encouraged slightly by a comment of a government official that "serious consideration" was being given to bringing products under the voluntary imports plan.

Roland A. Whealy, Carson's assistant, told a panel discussion on imports that "products are under serious consideration, and the determination will be made by the Cabinet committee. It can go ahead and do something about products without certification by the Office of Civil & Defense Mobilization."

Whealy explained that the imports administrator's office does not have authority to consider product imports. "We are limited to crude and unfinished products," he added.

Whealy told IPAA members that over-all requests for imports quotas now pending from 90 newcomers and 24 present importers would add 1-million b/d to present crude allocation.

"Worsening" conditions within the domestic industry—primarily reductions in crude prices and continued increases in producers' costs—depressed the independents almost as much as the imports outlook.

Said Gordon Simpson, president of General American Oil Co. of Texas, who was reelected president of IPAA: "While catastrophe will not overtake us overnight, we must recognize and fight the deterioration of our industry, which comprises a sobering threat to national security."

He pointed to declines during the first 9½ months of 1958 of 13% in total drilling and 21% in exploratory drilling, and a drop of some 23-million ft. in total footage drilled, compared to the like 1957 period.

His views were echoed by Lester Clark, of Daniel & Clark, who said, "Our industry is sick—and critically sick." There have been "22 separate crude price cuts which have come since July of this year," he said.

The Cost Study Committee reported that the industry does not have adequate revenue to expand reserves, due to "inadequate prices, loss of markets to foreign imports, and rising prices of materials and wage rates."

The average price increase of 25¢ per bbl. in January, 1957, the committee reported, "did not compensate for previous cost increases. And, since then, a good part of the increase has been lost through various types of price reductions.

"About one-half of domestic production has suffered from downward adjustments, with the effect that at least half of the January, 1957, price increase has been lost."

Another worsening condition in the domestic industry is that "too many unnecessary development wells and not enough wildcat wells" are being drilled.

This was the view of Jake L. Hamon, independent producer, and one of the founders of the recently organized 75-member Oil Conservation Forum, who told his fellow producers:

"If we went to wider spacing, we would save a lot of money that is now being wasted and . . . would produce the same amount of oil.

"Whether we like it or not, we are in competition with foreign oil, and it behooves us to become more efficient. After all, under our present practices, we cannot even compete with Canadian oil, due to wider spacing [in Canada]."

Wider spacing, Hamon added, would increase the rate of production per well, reduce development expense, and lower lifting costs.

The new forum, he said, would work for wider spacing.

IPAA Sees 4.3% Gain in '59 Demand

(Supply & Demand Committee forecast, in 1,000 b/d)

Domestic	1st Quarter Vol.	% Chge.	2nd Quarter Vol.	% Chge.	3rd Quarter Vol.	% Chge.	4th Quarter Vol.	% Chge.	Year 1959 Vol.	% Chge.
Demand	**10,070**	**+10.4%**	**8,750**	**+5.6%**	**8,835**	**+4.1%**	**9,945**	**+4.5%**	**9,400**	**+4.5%**
Gasoline	3,595	+ 3.8	4,190	+3.3	4,230	+2.1	3,950	+3.1	3,991	+3.0
Kerosine	490	— 2.0	175	+8.0	200	+9.9	430	+4.9	324	+3.2
Distillate	2,635	+ 4.0	1,350	+6.2	1,240	+5.8	2,220	+5.2	1,861	+5.3
Residual	1,735	+ 2.0	1,325	+8.2	1,255	+0.6	1,585	+2.9	1,475	+2.9
Other	1,615	+ 8.4	1,710	+8.6	1,910	+9.9	1,760	+8.3	1,749	+9.1
Export Demand	260	— 1.5	255	—4.1	260	—7.8	250	—5.7	257	—4.5
Total Demand	**10,330**	**+ 3.8**	**9,005**	**+5.3**	**9,095**	**+3.7**	**10,195**	**+4.2**	**9,657**	**+4.3**
Stock Change	—623	.....	+517	.....	+510	.....	—336	.....	+20	.....
Required Supply	**9,707**	**+ 6.3**	**9,522**	**+10.3**	**9,605**	**+4.5**	**9,859**	**+3.1**	**9,677**	**+5.9**

U.S. Sets Precedent in Utah

Has the government, by ordering a shutdown of production from Indian lands in Utah, signaled the beginning of a new policy? If so, many millions of acres of oil lands under federal control could be affected.

Clearly, the action in Utah set a precedent that conceivably could be followed elsewhere. That is, if the federal government becomes dissatisfied with the action—or lack of action—by a state on a conservation problem, it could take direct action on its own (page 44).

There seems to be little doubt that the federal government has long held conservation authority over federal lands. But the action in Utah was its first exercise of such power.

Interior Dept. lawyers say—and oil company attorneys do not challenge—that the Mineral Leasing Act gives the Secretary of the Interior the authority (or responsibility) to prevent waste of natural resources on federally-owned lands.

When questioned as to whether similar moves may be made else-

where, Interior Dept. officials have no comment.

They only make the point that the Utah action was the first case of its kind. And they say it wouldn't have acted there if there had not been waste of natural gas by flaring.

They also point out that they took the action only after a request had been made by the Indians.

They indicate that they won't act except in instances where they feel that state conservation rules are not adequate.

However, the Utah action itself demonstrates that the federal government is set to challenge the "adequacy" of state conservation rules when federal lands are involved.

The Utah Oil & Gas Conservation Commission this week strongly denied an "absence of action" on its part. Rather, it said, it had delayed shutting down gas-flaring wells because of a request by the U.S. Geological Survey.

Further, the state agency said, it had been in the process of hiring an independent consulting firm to survey waste and reservoir pressures in the fields when Interior Secretary Fred Seaton issued the shutdown order on Oct. 13.

Utah also contends it has authority to make rules that are binding on operators of federal leases within the state. Interior Dept. officials dodge the question of what they would do if Utah comes up quickly with some new, tighter conservation rules.

There are persistent rumors that the Interior Dept. is considering similar moves in other areas of the Four Corners, and that offshore gas flaring is also being studied.

This could, therefore, set the stage for solidifying a long-range federal policy for all of its public lands. Interior Dept. officials stress, however, that no "scare" is implied in its Utah action.

Oil industry observers note that the impact of any general federal program would be widely felt, because of the extent of government lands.

It has 5,296,373 acres of Indian lands under lease, including about 1,800,000 in the Four Corners area.

Offshore, it has leased 266,678 acres off the Texas coast and 1,444,491 acres off the Louisiana coast.

In the U.S., not including Alaska or the Indian lands, it has leased 77.7-million acres.

In Alaska, it is retaining 263-million acres, of which oil leases cover about 33-million acres now and probably will total 85-million in the near future.

Borden Report Is Made

Canada's Borden Commission has recommended greater governmental scrutiny of natural gas and crude exports.

The commission, in an interim report released last weekend, favors a continuation of the licensing of exports. But it calls for a greater study of available supplies and of proposed prices before export authorizations are given.

The commission's principal proposal is for the establishment of a permanent national energy board.

This board would advise the Canadian government on all energy policy matters under federal jurisdiction. Further, the board would issue certificates to applicants for construction of pipelines to cross provincial or international borders. And it would license exports and imports of gas and oil.

The commission recommends stricter regulation of pricing and other practices of companies moving gas or oil in interprovincial or international trade.

It suggests that this pricing work be done by the Board of Transport Commissioners.

It does, however, call for the repeal of an existing regulation which forbids sale of gas outside Canada at lower prices than those at which it is sold in Canada.

The commission explained that it considers this regulation unenforceable.

The commission also calls for closer "integration" of the work of regulatory bodies of Canada and the U.S.

It would seek to achieve this by letting a representative of the proposed national energy board sit in on FPC consideration of cases involving the two nations. And FPC would be permitted to have a representative at the board's meetings.

The commission recommends withdrawal of a promise of an export permit to Trans-Canada to sell gas to Tennessee Gas Transmission for resale in the U.S.

The reason, it says, is that Trans-Canada has already sold to eastern Canada users all the gas it is now authorized to move out of the Alberta province.

The commission suggests that if Trans-Canada gets a further allocation of gas from Alberta, a new export application be filed.

The commission's recommendations are just that—recommendations. It will be up to the Canadian government to accept or reject them.

PLAN '59

PLAN '59 NEXT WEEK in Petroleum Week

What is **PLAN '59?**

For all industry it is McGraw-Hill Publishing Co.'s plan to help business modernize for growth and profits.

For the oil industry it is PETROLEUM WEEK's comprehensive survey-report that will show what the modernization problem is—and what is being done about it.

About 300 oil industry men have contributed information to PETROLEUM WEEK's survey, mainly through personal interviews by 18 staff reporters. Among the 300 are executives with major oil companies, producers, independent refiners and marketers, contract drillers, oil equipment and supply companies, refinery service firms, oil associations, oil bankers, management consultants, and others.

Important features of the report will include:

- A review of modernization planning in exploration and drilling, production, processing, transportation, and marketing.
- An analysis of how modernization is planned and financed.
- A look at the role of electronics.
- A checklist of danger spots caused by outmoded organization and administrative techniques.
- A review of the modernization potential in the whole U.S. Economy—as an answer to the industrial challenge of Russia.

These features will be illustrated by more than 60 pictures and tables.

Issue date: Next week, Nov. 7.

NIGERIA, with a steadily mounting production—now about 7,000 b/d—flowing through its two pipelines, is one reason why, in . . .

Africa: Prospects Lure Oil Safaris

Editor's note: This is the second special article about Africa. The first covered French Africa (PW—Sep.26'58,p14).

From the mine-studded sands of Libya to the humid bush-country of East Africa, oil men are leading a relentless search for oil on the African continent.

Hoping to find an alternate source of crude for a Europe virtually dependent on the Middle East, oil men are concentrating on the "edges" of the continent, where numerous sedimentary basins are considered likely prospects.

So far, production is modest. But the possibilities are termed "enormous."

In 1957, only 50,690 b/d were produced in Africa—an increase of about 13,700 b/d over the previous year. Most of the crude came from Egypt and its newly developed fields at Belayim and Abu Rudeis. Increasing amounts, however, are now coming from other areas, including Nigeria and Angola. (Oil in the Sahara is expected to boost the 1957 total more than four-fold by 1961.)

Green and black mambas, cobras, and even ferocious bees that attack on sight are among the many problems faced by oil men exploring in Africa.

If they get off the beaten track, they may have to contend with rhinos, leopards, and lions. In addition, the jungle areas feature the usual run of tropical diseases—malaria being the biggest problem.

Oil crews in the field have to be 99% self-sufficient. Too, they have to face difficult communication problems and, in some areas, water shortages.

U.S. oil men interested in joining the African oil hunt will find there is no blanket oil law covering the many separate states.

Some of the territories are independent, others still have ties to Europe.

In Angola, for instance, oil men must consult both the local government and the Portuguese government.

On the other hand, Libya, an independent nation, drew up its own oil law in 1955.

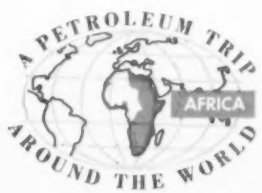
U.S. oil men have flocked to Libya, where four oil shows have brought high expectations.

Drilling is hot in Libya right now (PW—Feb.14'58,p56). International majors—Esso, Socony, Gulf, Shell, Pan American, Caltex, British Petroleum, and Cie. Francaise des Petroles—are exploring, as well as several independents: the Conorada companies, Texas Gulf Producing, and Nelson Bunker Hunt.

An agreement, subject to government approval, will give a 25% interest in Socony's operation to a German refiner, Gelsenberg Benzin.

The most encouraging finds to date have been those of the American-owned Oasis Oil Co., a wholly owned subsidiary of Ohio Oil Co., and operator for Ohio's joint account with Continental and Amerada on 62-million acres of concessions.

Oasis believes it has its second discovery with its second wildcat in Libya. Its No. B1-32 Dahra, located 24 mi.



south of its initial find, the No. 1 Bahi, tested 38 bbl. of 36-gravity oil with no water in 1¼ hours from a limestone interval at 3,758-808 ft.

Its first wildcat tested 75 bbl. of 39-gravity oil in 2½ hours late in June. Its interval was considerably lower, a 32-ft. sandstone section from 5,822-854 ft.

The first oil show to cause some excitement was Esso's Atshan find. But the structure was too small to develop. The well originally tested 500 b/d of 47-gravity crude through 3/8-in. choke from 2,100-40 ft.

A test drilled by Cie. Francaise des Petroles tested 20 bbl. of light crude mixed with salt water on two-hour test of an undisclosed interval around 4,600 ft.

In neighboring Egypt, production climbed 12,460 b/d in 1957 to 45,140 b/d—due mainly to increased output from the Belayim and Abu Rudeis fields at the head of the Red Sea. The fields are run by a combine of the Italian state-owned Agip and Petrofina of Belgium (51%), and Egyptian-government companies (49%).

Crude production has climbed steadily, and 1958 production is expected to reach 40,000 b/d, Agip says.

Other, older production comes from the nearby fields of Shell's Anglo-Egyptian and Socony's Mobil of Egypt.

All is not well in the Egyptian picture, however: Just last week, U.S. companies gave up the search for oil in Egypt's large Western Desert—leaving the Red Sea area as Egypt's only prospective oil region to date.

Saraha Petroleum—operator for Continental, Ohio Oil, Cities Service, and Richfield—has been the sole U.S. group exploring in Egypt. The reason for its withdrawal: no oil after 4½ years of exploration at a cost of $35-million.

In Nigeria, a joint Shell-British Petroleum unit is pumping about 7,000 b/d through its two Nigerian pipelines to Port Harcourt.

A 6-in. line runs 30 mi. to the Afam field, and a 10-in. line runs 65 mi. to the Oloibiri field. The companies have drilled about 25 exploratory tests to date.

By the end of 1958, the companies plan to have nine drill strings operating, including two barges.

Socony Mobil is about to do some marine shooting on its permit area in the southwestern part of the country.

Over 100 mi. to the southeast, Belgium's Petrofina is holding its Angola production down to local consumption levels.

The company put a 2,000 b/d refinery into operation this spring to cover that market.

It is now producing from three structures—Benfica, Luanda, and Cacuaco. "Angola is a promising territory, and we are hoping for a big field," Laurent Wolters, managing director of the company, told PETROLEUM WEEK this week.

The Belgian Congo will be next on Petrofina's exploration list.

In the neighboring Cabinda region of Angola, Gulf is drilling ahead on its wildcat.

Oil men are pushing ahead with exploration in East Africa, where oil potential still remains to be proven:

• **In British Somaliland, Standard-Vacuum is about to spud its first Africa wildcat** near the site of the only notable oil seep in East Africa. The Conorada group, after completing its fifth dry hole, said last week it was "discontinuing" operations. And British Petroleum Co. is getting a wide-scale geological survey under way on its acreage (PW—Oct.3'58,p71).

• **In Somalia, two companies are preparing new wildcats.** The Italian state-owned Agip is readying its third test, about 140 mi. northwest of the area previously explored. Its number one problem: logistics. Sinclair Oil Corp. is moving to its fourth location, after drilling three dry holes, one of which was the deepest test ever drilled in Africa, carried below 16,000 ft. A Canadian company, Frobisher, Ltd., has an application pending to convert some 70,000 sq. mi. of preliminary exploration permits into concessions (PW—Oct.17'58,p53).

LAND MINES, left over from World War II, plague exploration crews in Libya.

• **In Kenya, BP-Shell has started coring work at Lamu,** following gravity and geological surveys. Frobisher is now readying a geological party for its 7,900-sq. mi. license in northeast Kenya.

• **In Tanganyika, BP-Shell is drilling its third test in East Africa** at Mandawa, about 15 mi. inland from the southern coast, midway between Kilwa and Lindi. Surveys continue in the Kichi-Matumbi hills. (The company's other tests were drilled on Mafia Island and Zanzibar.)

• **In Mozambique, new drilling plans are expected** now that a new long-term concession has been granted jointly to Gulf and Pan American International. Gulf has already done considerable work in the area. Five wildcats have been drilled—the latest in 1957—some with shows of gas.

Exploration is still in its infancy in some of the West African states.

While Gulf did considerable drilling on its Ghana concession in 1956-57 before suspending operations, other companies in the area are in the initial states of exploration: a BP-French team is studying results of its just-completed geophysical survey; Esso is starting geophysical work in Portuguese Guinea; and other companies have been reported interested in Liberia and Sierra Leone.

The long-range potential of Africa's market is still attracting oil companies.

Despite its estimated population in excess of 240-million, Africa consumes only 450,000 b/d of petroleum products—less than 2% of world consumption.

But if industrialization continues at its expected pace, and the population keeps expanding, Africa's market is expected to bloom.

Refining capacity on the continent is also on the upswing. At present, capacity totals around 100,000 b/d, of which 74,000 b/d are in Egypt. Stanvac's South African plant at Durban supplies most of the rest.

Shell, however, is planning a $75-million refinery for the Durban area. But the city fathers have take an "on-again-off-again" attitude on its proposed location.

In addition, several international majors are planning a 40,000 b/d refinery in Algiers (PW—Sep.26'58, p14).

What's New / IN THE INDUSTRY

Sinclair Oil and British Petroleum have reached a unique agreement to supply and market crude in the Western Hemisphere. The agreement announced "in principle" between the U.S. company, a net buyer of domestic crude, and the British firm, a net seller of Middle east oil, provides:

- **BP will supply Mideast crude on a long-term basis for Sinclair's domestic requirements.** Sinclair already imports BP crude.

- **Sinclair and BP will set up a joint company to market Venezuelan and Persian Gulf oil in the Western Hemisphere.** Sinclair's Venezuelan output now runs about 60,000 b/d. BP has no Venezuelan concession.

- **The two will form another joint company for exploration and production, primarily in Latin America.** Other than Sinclair's Venezuelan operations, neither is active elsewhere in Latin America.

The two companies are exploring "other areas and activities of possible mutual advantage . . . involving no conflicting obligations." They said the joint ventures, "while in no wise exclusive . . . should prove to be highly beneficial . . . in providing each with greater strength and wider flexibility of crude supply and markets in both hemispheres."

•

Louisiana producers may start making up some 700,000 bbl. of back allowable in November. The Conservation Dept. plans an order to permit production of the permissible that was not produced during hurricane Audrey, in June, 1957. The order will spread the supplemental allowable equally over November, December, and January.

Estimates are that the supplemental allowable for November will run about 8,000 b/d, which would be added to the 846,531 b/d regular permissible set for the month. The regular allowable was raised 4,686 b/d to cover new production.

In Kansas, the November allowable was trimmed 3,000 b/d due to an increase in storage supply. The Corporation Commission ordered a 327,000 b/d allowable.

•

API's 1958 "Gold Medal for Distinguished Achievement" will be awarded to W. S. S. Rodgers, former president and retired chairman of The Texas Co. Rodgers, who started his industry career in 1911, still serves as a director and on the board's executive committee. His fields of activity included drilling, refining, and sales before reaching the top executive posts. The specific reason for the award will not be disclosed until it's presented at the annual meeting in Chicago next month.

Joe Zeppa, not Chris, Heads AAODC

Petroleum Week confused photos of the Zeppa brothers earlier this month. Joe Zeppa (left), president of Delta Drilling Co., was elected president of the American Assn. of Oilwell Drilling Contractors as was stated (PW—Oct.10'58,p15). Due to an identification error, the picture used with the story was one of Chris Zeppa (right).

INSIDE *Slant*

REFINING SECOND IN CANADA

Surprising as it may seem, refining now ranks second in value among the leading manufacturing industries in Canada. It is exceeded only by pulp and paper.

To take it a step further, oil refineries lead all manufacturing in Canada in average wage levels.

Canada's refining capacity is expected to average 825,000 b/d at the end of 1958. This is quite a jump from the average of 246,000 b/d in 1946.

Not only is it quite a jump in capacity; it also represents considerable expenditure of money.

In 1958 alone, Canada's oil industry will spend approximately $120-million on the expansion and improvement of its refining facilities.

And the refinery expansion program for the past 12 years represents an expenditure of $800-million.

The rapid expansion has been made to meet Canada's phenomenal postwar increase in demand for petroleum products. The growth rate has been at least 10% per year, or three times that of the U.S. over the same period.

It was estimated at the recent dedication at British American Oil Co.'s Port Moody refinery that capacity in Canada would reach 1-million b/d in the early 1960s.

Leroy Menzing
EDITOR

Looking Ahead in Washington

McGraw-Hill
Washington
Bureau
October 31, 1958

U.S. tax and foreign investment policies are slated for study. A Senate subcommittee headed by Sen. Wayne Morse (D., Ore.) will open hearings early next year into U.S.-Latin American relations. A House Ways & Means subcommittee kicks off hearings Dec. 1 into U.S. private foreign investment, with a view to gearing such investment closer to American foreign policy.

The congressional inquiries may spell trouble for international oil firms. With petroleum companies accounting for more than half of new U.S. investments abroad, they can't be overlooked. The policy of allowing taxes paid overseas to offset U.S. taxes will be reviewed. So will the possibility of taxing funds transferred between two foreign subsidiaries. And there's bound to be some pressure to relax the U.S. policy against making development loans to nationalized oil companies.

•

Negotiations for building a new helium plant are under way. The addition will increase output at the government's plant at Keyes, Cimarron County, Okla., and will add about 240-million cu. ft. a year to the Bureau of Mines' capacity. Four plants near Amarillo, Tex., now produce 360-million cu. ft. a year.

Fluor Corp., Los Angeles, is negotiating with the Bureau of Mines. It is first on a list of eight companies that a contract evaluation board selected as possible designers and builders of new capacity authorized this year by Congress.

Should no agreement be reached with Fluor, the bureau will go one by one down the list of the other seven companies. No other company names have been made public. Some of them are complaining that they should have the opportunity to negotiate at the same time as Fluor. Operation of the new plant is expected by August, 1959. The expansion will cost around $12-million, and will provide an extra supply of helium particularly for defense and atomic energy programs.

•

Coal interests are increasingly incensed by gas pipeline rate procedures. They complain that the Federal Power Commission has been allowing the pipelines to juggle the components of their rates to local utilities in such a way that gas can undersell coal despite rising gas prices. Coal people say the residential consumer "subsidizes" these cheap industrial sales. And they intend to challenge the practice in future proceedings. FPC and the pipelines have taken the view that the rate tilting benefits all consumers by keeping a high load factor.

•

Top officials vow that the project to use atomic bombs in oilfields is still alive. Champions of Project Plowshare—which includes a move to use A-bombs to produce oil from shale or depleted petroleum fields—had feared the disarmament talks set for Geneva would result in abandonment of the idea. That seems less likely now. Besides, Chairman John A. McCone of the Atomic Energy Commission has emphasized that he stands squarely for continuation of the project. And he says President Eisenhower does, too.

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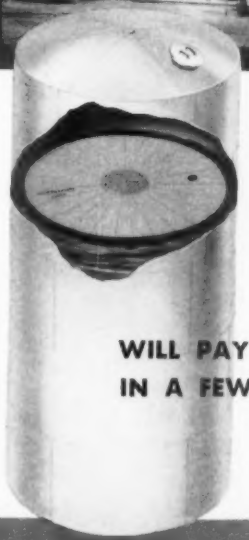

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Northwest Kansas Is Settling Down

Look for a lessened rate of exploratory drilling, but continued development activity, in northwest Kansas, now that the first flurry of drilling in this new oil area has ended.

Some 35 holes have been drilled in a six-county area since Phillips Petroleum Co. No. 1 Llanos, section 10-6s-37w, Sherman County, was completed last spring. Of these, 29 have been dry.

The wildcat recovered 12,106 ft. of oil from five Pennsylvanian levels tested, and was completed for 319 b/d through perforations in the Cherokee at 4,804-12 ft.

Phillips' success touched off a heavy lease play and a big influx of independents into the area (PW—May 23'58,p22). All these independents, save one, have been unsuccessful so far.

Wildcatting was heaviest at the end of the summer; now it has simmered down, with many of the independents having pulled out.

While the independents carried on wildcatting, Phillips continued development of its Llanos field.

Phillips now has production from three zones in three wells at Llanos, in northwest Kansas (map). Another discovery was brought in by Jackson, Shear & Parker, about 25 mi. northeast in Rawlins County.

Phillips No. 1-A Hartley, section 3-6s-37w, ¼ mi. north of the discovery, was completed for 345 b/d through Marmaton perforations at 4,585-88 ft., 4,633-49 ft., and 4,664-70 ft.

Phillips No. 2 Llanos, ¼ mi. south of the discovery, was completed for 120 b/d in the Lansing-Kansas City.

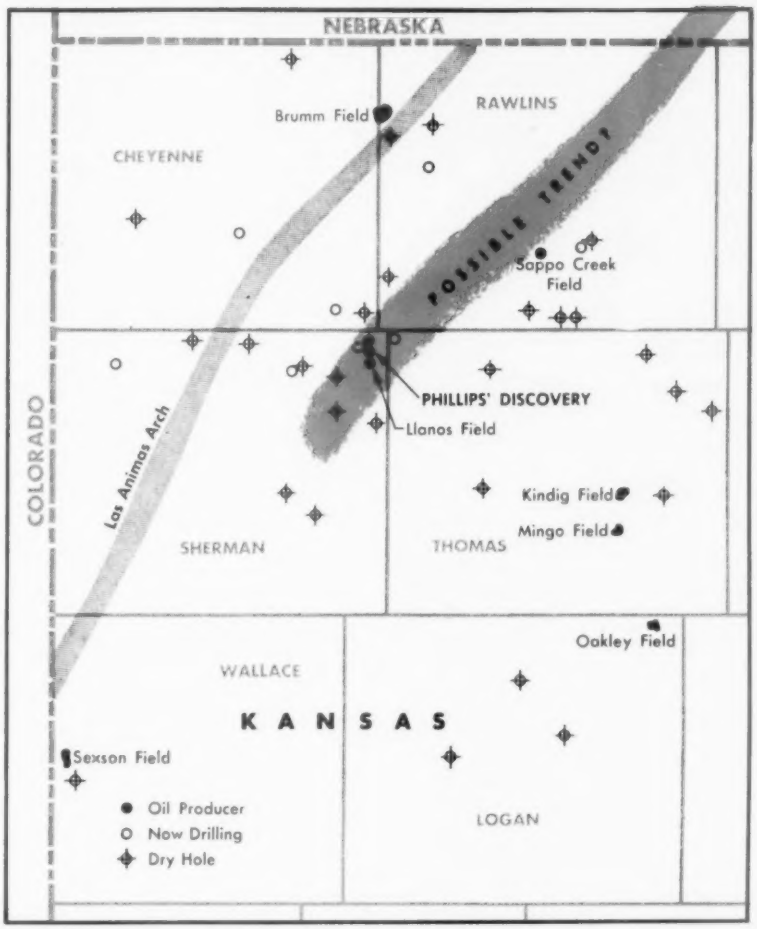
The company has an indicated fourth success at No. 3 Llanos, ¼ mi. west of the discovery. This prospect had recovery of 245 ft. of gassy oil on drillstem test of the Lansing last week.

Jackson, Shear & Parker was the first, and so far the only, independent to find pay in the hunt that followed completion of No. 1 Llanos.

JS&P No. 1 Bowles, section 24-4s-34w, was completed for 120 b/d at 4,430-36 ft. in the lower Marmaton to open the Sappa Creek pool.

The firm's No. 1 Ruda, 5 mi. east of No. 1 Bowles, made good recoveries on drillstem tests, but trouble in sealing off water forced abandonment.

Jackson & Shear No. 1 Waterman, section 15-4s-33w, 4 mi. northeast of No. 1 Bowles, last week recovered 320 ft. of 36-gravity oil on 1-hour drillstem test of the Marmaton at 4,472-90 ft.



SUCCESSES HAVE BEEN FEW in this six-county area since Phillips Petroleum Co. completed its Llanos discovery last spring. But hopes are high on trend possibilities.

There is some belief that production will be found in a trend extending in a northeast-southwest line through Phillips' Llanos field and JS&P's Sappo Creek pool.

Warren Shear, JS&P drilling contractor, believes a relation exists between the Marmaton production at No. 1 Bowles and Llanos. He points to production in southern Nebraska along the line connecting the two fields as evidence of a possible trend.

This trend, he feels, is related to the Las Animas Arch. Phillips also mentioned this factor.

Shear's work originally was with Miles Jackson, Duncan (Okla.) drilling contractor, and Robert L. Parker, Tulsa (Okla.) contractor, but Parker has since pulled out.

A Phillips spokesman says: "The area will have strong play for at least a year yet. We cannot speak further of our plans because they change from week to week.

"But we continue (1) stratigraphic testing in the general area; (2) supporting independents testing the outskirts; and (3) developing the Llanos field."

Phillips hasn't disclosed how large a budget has been set for the play, nor has it estimated how large the area to be proved eventually might be.

Other independents in the area have varying plans and views.

R. G. Lawton, of Magnolia, Ark., who spudded No. 1 F. F. Bair, section 20-6s-41w, Sherman County, a few weeks ago, says:

"We have no knowledge of the

structure, but we intend to drill three or four more wildcats, working out our present deals." He adds that he will be ready to offset any successes.

A spokesman for General Crude Oil Co., of Abilene, Tex., says that company is through wildcatting in the area. F. P. Schwab, of San Antonio, carried a ¼ interest in the two dry holes drilled by General Crude.

A Miami Development Co. official says his company is through as an operator, though its rig in the area is still at work on a contract basis.

John P. Roberts, assistant director of the state's conservation division, sums up the situation this way:

"With the initial flurry over, drilling will continue in the area for a year or two. Many people thought drillers were crazy in trying to find another Fairport field in Russell County (more than 20 years ago). Now Russell has Gorham, Hall-Gurney, and three-quarters of the Trapp fields—all prolific producers since that time."

R. G. Smith, former Phillips' geologist now with JS&P and Westheimer & Nustadt, and said to be a leading factor in touching off the area play, says:

"Key to development of the area is the recognition that, in Kansas, stratigraphic factors outweigh structural." He is confident of further development, but adds that, "The majors will have to become more generous with dry-hole money, or less demanding on depth requirements, because it will be an expensive development."

A total of 14 operators entered the six counties of Cheyenne, Rawlins, Sherman, Thomas, Wallace, and Logan after No. 1 Llanos was completed.

Only one test (dry) has been drilled in Wallace County—by Skelly Oil Co. This test, however, was not actually related in any way to the Llanos play.

Other operators who entered the area are J. S. Carter, Fairfield, Ill.; Roland L. Pelt, Dallas (Roland Petroleum Co.); Virginia Drilling Co., Wichita, Kan.; Petroleum, Inc., Wichita; R. Westheimer & Nustadt, Ardmore, Okla.; Westheimer, Nustadt & Shear; Shamrock Oil & Gas Co., Amarillo, Tex.; and DeWeese-Sanderson, Abilene and Salina, Kan.

Automation: Key to Future Strength

The swing toward automation in oil production is still in its infancy, and must be greatly accelerated, says D. R. Patterson, of Atlantic Refining Co.

Speaking to a petroleum engineering seminar at the University of Texas last week, Patterson added that automation is essential if the domestic oil industry is to remain strong. The seminar was one of a series in which Atlantic personnel are discussing various phases of the drilling and production industry (PW—Oct.24'58,p20).

A primary attraction of automation today is that it can give some relief from inflationary pressures.

The U.S. oil industry, Patterson says, is in a financial squeeze, because it has tried to absorb increased operating costs without boosting prices. Automation offers one means to ease the pressure of this squeeze.

Automation also will help to meet the expected future manpower shortage, and to reduce capital investment.

The percentage of the population in the working age bracket is decreasing, while the standard of living is rising, says Patterson. Therefore, to keep the living standard on the rise, with fewer people to do the job, there must be an increased use of machines.

Equally important are economic considerations. Capital investment in lease production equipment can be reduced in several ways. ACT equipment, for example, generally costs less to install than a conventional tank battery when the production is 200 b/d or more. And offshore, automatic controls, which can be regulated from shore, can often eliminate the need for offshore living quarters.

Also, many operating expenses can be reduced.

Maintenance expenses are saved because an automatic lease generally contains less equipment and more safety devices than a manually operated lease, Patterson says.

For Atlantic, maintenance costs have been very nominal, says Patterson. The oldest automatic installation in Atlantic's operations today was installed in January, 1953. It includes automatic electric well controls on 22 wells, plus automatic tank switching. To date, says Patterson, total maintenance cost on this equipment has amounted to $30, and these costs were incurred soon after installation.

Automation also can reduce travel expenses occurred in manual operations.

In southern Louisiana, says Patterson, Atlantic has two leases in one field which are separated by a river and require 60 mi. of driving to get from one lease to the other.

The potential saving through automatic equipment is obvious, says Patterson, when you consider that the cost of a pumper's travel is figured at 7¢ or 8¢ per mi. Even greater savings can be realized offshore, he says, where travel costs are considerably higher.

Intangible benefits—such as greater accuracy and improved reservoir performance—also result from automatic controls.

In manual gauging of tanks, says Patterson, encrustation on the walls of the tank is probably the biggest source of error. In testing, one company found that a hand-ganged measurement had a cumulative error of about 0.8% when the tank wall was encrusted to a depth of ½ in. It was calculated that a ½-in. wax crust in all of the tanks involved in the test would cost the company some 30,000 bbl. of oil per year, or about $117,000.

Improved reservoir performance is made possible through the more frequent and more accurate test data obtainable with automatic well-test facilities. These are particularly important to the reservoir engineer in the case of secondary recovery projects.

Automation also will be of assistance in effecting the most efficient use of equipment and personnel, says Patterson.

By the use of automatic time scheduling controls, production peaks and valleys can be evened out, and lease equipment sized for continuous operation at or near maximum capacity. Evening out of production will make it possible to operate auxiliary equipment more efficiently.

Automation also permits the pumper to perform some tasks that otherwise would not be done, and others that normally would require a roustabout gang. Also, automatic devices leave a pumper free to schedule his work so as to accomplish the most in the least amount of time.

The best time to install automatic equipment, says Patterson, is when lease equipment is installed or replaced.

It is, however, impractical to equip a new lease for automatic operation from the time the first well is drilled, because an efficient automatic system cannot be readily outlined at that time. There is a great need, says Patterson, to develop equipment concepts that will permit the economical application of automation principles to new leases as they are developed.

In California . . .

Bottomhole Heaters Spur Production

Growing importance of bottomhole heaters in production is underscored by Tidewater Oil Co.'s remarkable success with the tool in the old Kern River field, Kern County, Calif.

The bottomhole heater, a relatively new technique in oil production, is used to increase production in wells producing heavy crude.

In the past 16 months, Tidewater has installed bottomhole heaters in 54 Kern River wells. All heaters are gas-fueled, water-circulating types.

Prior to installation of the heaters in the 59-year-old field, the wells were pumping 250 b/d net and 449 b/d gross.

With heaters, the 54 wells now are pumping 1,443 b/d net—an increase of almost 500%—and 1,917 b/d gross. Gravity of the oil remains unchanged at 13.5.

Average net production increase per well figures out to 22 b/d—substantially better than the average of 10 b/d generally credited to bottomhole heaters in previous California installations.

Increases in individual well production are eye-opening. On the San Joaquin property, No. 70 went from 2 b/d to 48 b/d net; No. 76 from 2 to 52; No. 88 from 7 to 50; and No. 94 from 6 to 58.

Some increases have been low in barrels but high in percentage. One well, for example, went from 3 to 13 b/d. And another well that had been idle for some five years because of a lack of production—its last production has been about ⅓ b/d—responded to a heater with 6 b/d output.

Economics favor the bottomhole heater as a cheaper means of getting more oil at Kern River than the drilling of a new well.

The average 22 b/d increase per well credited to the heaters compares with average initial production of 25 to 40 b/d at a new well in the field, with the well normally declining to around 10 to 15 b/d within six months to a year after completion.

Wells go to approximately 1,000 ft., and cost approximately $18,000 to $20,000 to drill and complete. Average cost of installing a heater, based on a four-well installation, is $2,000 per well.

The $8,000 cost of a four-well installation includes about $4,000 for surface installations—the heater, circulating lines, gas-collecting lines, labor, and transportation—and $4,000 for subsurface installations, including circulating lines down the hole, heat exchangers, clamps, fittings, labor, and transportation.

Payout for heaters is about 90 days. Payout for a new well is about 18 months.

TIDEWATER OIL CO. ENGINEERS Ernie Young (left) and Mike Bealessio discuss operating details of bottomhole heater installation in California's Kern River field.

Tidewater's success appears to be based on the fact that the company has developed an ability to select wells that lend themselves to bottomhole heating. Main factors in this selection are the fluid level and the mechanical condition of the well.

In general, wells with a high static fluid level appear to do best. In the Kern River field, fluid levels range all the way from 30 or 40 ft. above bottom to 500 or 600 ft. above bottom.

Experience has shown that the wells with fluid level 100 ft. or so above bottom are the most suitable.

The mechanical condition of the well has a good deal to do with the well's adaptability to bottomhole heating. A 6⅝-in. liner is regarded as the smallest in which a heater can be run. Design and size of perforations also is important, with sanding problems noted in wells with big slotted liners.

Heaters also appear to work better in wells with 100-, 120-, and 140-mesh liners. Sand trouble has hindered operations in wells with 180-mesh liners and above.

After fluid level and mechanical conditions have been appraised, the next step in Tidewater's method is testing of the well, or another in the area, with one of ten movable field equipment units.

The company normally tests the well for about a month before a decision is reached as to whether it should make a permanent heater installation. No permanent installations are made without this test.

The company favors a four-well installation in making permanent installations.

This four-well system includes one 8,000-Btu. heater, a header system, and two ¾-in. lines to carry hot water to and from heat exchangers in the wells.

Water is heated to about 250F on the surface, then circulated through one of the two ¾-in. lines down the hole into the heat exchanger, which is one or two plain joints of tubing. It returns to the surface through the other ¾-in. line, which, like the first

line, is clamped to the tubing in the hole. The water returns to the heater at a temperature of about 190F.

Heat exchangers normally are 30 ft. long. In some wells, two joints of tubing have been made up into a 60-ft. heat exchanger.

In the first phases of the program, the company put as much as 200 ft. of heat exchanger into some holes, trying to heat as much as possible. It developed, however, that there was not enough zone pressure to warrant the long heat exchangers.

Heat exchangers are set opposite perforated intervals, with the company trying to keep them 10 to 15 ft. off bottom, depending on sand conditions.

One determinant for this is bailing records. An effort is made to find how much sand crews have been bailing from a given well. Then the company tries to set the heat exchanger just above that level.

About 28 gal. of water per minute are circulated on the four-well installation, or about 7 gal. per well per minute.

One of the benefits of heating has been an increase in the amount of gas produced by the wells.

By heating, Tidewater has been getting enough gas to run the heaters on about 75% of the wells. Unheated, the wells make little or no gas.

Gas requirement of the heaters is about 5,000 to 7,000 cu. ft. per day per well. In cases where wells don't produce enough gas to fuel the heater, the company uses public utility gas, or propane.

Tidewater has had no maintenance problems so far, so it has no idea of what these costs eventually might be.

A Tidewater engineer believes the heaters increase production because they increase pump efficiencies and clear tar and other deposits out of liners.

The engineer, John Grigsby, says that in a pumper that produces heavy oil, there often will not be a full load on the pump, or the rods won't drop into the heavy crude. Heaters remedy that situation.

As far as cleaning of liners is concerned, Tidewater formerly cleaned wells with a perforation scratcher that, for two or three weeks, would increase production on a par with heater-stimulated increases. Then the well would revert to its former, lower rate.

With heaters, the cleaning process appears to be lasting, Grigsby says.

Tidewater has not installed any new heaters since curtailment of production last winter. The program may be resumed after the first of the year.

What's New / IN EXPLORATION,

Atom Blasts Considered For Athabasca Sands

The possibility of "thawing out" the oil in the Athabasca tar sands by setting off a nuclear blast is moving a bit closer to reality.

A nuclear-blast proposal is now under consideration by the Canadian cabinet, with a go-ahead expected in early November.

Permission to proceed would be refused, it is expected, only if the experiment were to be construed as a nuclear weapons test contrary to international agreements signed by Canada.

If cabinet approval is gained, a committee of scientific experts will be set up, composed of members of the Canadian Dept. of Mines, the Canadian National Research Council, and Atomic Energy of Canada, Ltd.

The committee would examine all information available on the idea, especially concerning possible radiation effects from such a blast.

It is hoped that a nuclear blast would melt the oil enough so that it would flow out of the sand and collect in the cavity created by a nuclear explosion.

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Leasing News

Feb. 19 is the date set by the Louisiana Mineral Board for the resumption of its lease sales (PW—Oct.24'58,p6).

"If bidding is depressed," says board chairman William G. Helis, Jr., "the board will maintain its policy of rejecting bids on grounds of insufficient consideration, rather than permit the state to suffer."

The Consolidated Ute Indian Agency will offer leases on tribal and allotted lands in Colorado, New Mexico, and Utah on Nov. 18-19.

The offering includes more than 52,000 acres, with tribal lands in the majority.

Lands to be offered are in Archuleta and Montezuma Counties, Colo., San Juan Couny, N.M., and San Juan County, Utah.

Sun Oil Co. was successful bidder for a 1,018-acre tract of Florida state land.

The land is a part of the University of Florida Agricultural Experiment Station in Gadsden County, in the northwestern part of the state.

A Sun representative says the company, which bid $4,100 for the tract, holds other leases in the area, and will drill a test within a year.

The Saskatchewan Dept. of Natural Resources will offer 11,090 acres for lease on Nov. 18.

Of the 54 parcels to be offered, 42 are in the southeast corner of the province. Most of the acreage is in semiproven or proven crude areas.

The Alabama Conservation Commission will lease 224 acres of state lands on Nov. 21.

The acreage, in four tracts, is in Mobile County.

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Calvert Drilling Co. has purchased the drilling assets of Mercury Drilling Co.

Purchase includes two 12,000-ft. rigs, warehouse facilities, and tubular goods.

Mercury will continue as a producing company.

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A $400,000 geological laboratory to serve the oil industry has been opened in Regina, Sask.

One function of the lab is to keep physical records of drill cuttings and cores.

The building was put up by the provincial government, with oil companies defraying the cost by paying an additional $25 on each well license.

Oil companies also will pay nominal charges for use of laboratory equipment and services.

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The New Mexico Oil Conservation Commission has authorized Ambassador Oil Corp. to install automatic custody transfer equipment in the Caprock Queen pool, Chaves and Lea Counties.

ACT equipment and storage facilities will be installed on the North Caprock Queen Unit No. 2.

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Republic Steel Corp. has reacquired Republic Supply Co., operators of oil country supply stores and pipe yards, for an undisclosed amount.

DRILLING, PRODUCTION

Republic Supply was sold by the steel company in 1948. It operates 45 stores and 12 sales offices in the Mid-Continent area.

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The Alabama Oil & Gas Board has relaxed its well-spacing requirements to allow 160-acre drilling units.

Under previous regulations, 40-acre spacing was required.

Walter B. Jones, state geologist, said that 160-acre units were necessary to establish the limits of the Citronelle field, Mobile County.

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The 31-year-old Bannatyne field, Teton County, Montana, is due to be revived with a new drilling program.

Becker Oil Co. is planning to drill 23 wells in the field to about 1,500 ft. Those on the outer edges of the field will be used to inject hot water or steam.

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Standard Oil Co. of California has started a gas injection pressure maintenance program at the Red Wash field, Uintah County, Utah.

The field, the largest producer in the Uinta Basin, is now receiving 11.5-million cu. ft. of gas daily through two injection wells.

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Engineering

An all-transistorized seismic amplifier system has been developed by Texas Instruments, Inc.

The Explorer Model 8000 seismograph weighs 57 lb. and is contained in a single case. An all-transistorized, regulated power supply and a lightweight 12-volt aircraft battery are contained in another case, weighing 45 lb.

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Drilling Highlights

Texas Panhandle—Apache Oil Corp. and Blackwell Oil & Gas Co. No. 1 Bradford, section 686, block 43, G&TC survey, Lipscomb County, flowed at the rate of 45 bbl. of oil per hour through 12/64-in. choke and perforations at 6,510-18 ft. in the Tonkawa. Earlier, the prospect flowed at the rate of 14-million cu. ft. of gas daily on 10-minute test of the lower Morrow sand at 9,803-13 ft. and at the rate of 3,750,000 cu. ft. of gas daily on test of the Mississippian at 9,950-70 ft. The wildcat is 3 mi. northwest of Lipscomb.

Arizona—Humble Oil & Refining Co. No. 1-E Navajo, section 1-41n-28e, Apache County, was completed for 562 b/d through 5/16-in. choke and perforations at 4,594-644 ft. and 4,726-72 ft. in the Hermosa. The completion, regarded as Arizona's first commercial oil discovery, is a mile south of Humble's 1955 discovery at No. 1 Navajo-Tribal, which flowed 46 b/d of oil and 4,141,000 cu. ft. of gas per day. Production of oil at the 1955 strike declined rapidly, however.

Oklahoma—Skelly Oil Co. No. 1-G Oklahoma, section 30-6n-6e, Cimarron County, yielded 116 bbl. of oil on 15-hour swab through perforations at 4,102-11 ft. in the Granite Wash. The wildcat is 10 mi. west of the Keyes area.

In Cleveland County, Petroleum, Inc., No. 1 Tullius, section 16-8n-2w, 1½ mi. northwest of North Noble pool, flowed 8 bbl. of oil per hour through 10/64-in. choke and perforations at 8,256-68 ft. in the Tulip Creek. The prospect also flowed 10 bbl. of oil per hour on test of the Oil Creek at 8,706-10 ft.

Smoke in Their Eyes

This is Phillips Petroleum Co. No. 2 O'Daniel, in Galveston County, Texas Gulf Coast, which blew out last week at 15,000 ft. For two days flames roared 500 ft. into the sky; then the hole bridged itself and cut off the flow of gas, thus stopping the fire. The blowout left a pit 30 ft. deep and 50 ft. across. Wreckage has been moved out, and the blowout zone is now being cemented off.

North Texas—Southern Union Gas Co. No. 1 Martin Unit, section 4, Dallas County school land survey, A-237, was completed for 231 b/d of 42-gravity oil through 18/64-in. choke and perforations at 5,844-52 ft. and 5,932-40 ft. in the Bend conglomerate. The discovery is 2½ mi. southeast of oil production.

North Dakota—Skelly Oil Co. No. 1 Tank, section 34-152n-96w, McKenzie County, was completed for 218 b/d through 14/64-in. choke and perforations at 9,176-84 ft. in the Madison. The discovery is 3 mi. south of Keene field and 4 mi. west of Blue Buttes field, with dry holes intervening.

East Texas—Leland Fikes, W. D. McBee, and Grover Geiselman No. 1 Adam Cone, Jr., unit, A. M. Lewis survey, on the east flank of the Bethel dome, Anderson County, was completed as a gas-distillate discovery flowing 4,600,000 cu. ft. of gas daily and 173 bbl. of 53.4-gravity distillate per million through perforations at 9,793-813 ft. and 9,820-39 ft. in the Rodessa. The find is 2 mi. east of similar production on the Dome's west flank.

Wyoming—Atlantic Refining Co. and Fremont Petroleum Co. No. 3 O'Brien Springs Unit, section 34-25n-86w, Carbon County, was dually completed for 1,176 b/d of oil through perforations at 6,891-955 ft. and 6,965-7,002 ft. in the Tensleep, and 5,050,000 cu. ft. of gas daily from the Nugget at 5,418-72 ft. The discovery is 2 mi. northeast of production.

West Texas—Midwest Oil Corp. No. 1 A. M. Clayton, section 16, block 31, township 6n, T&PRR survey, Borden County, was completed as an Ellenburger discovery for 136 b/d of 39-gravity oil on the pump through perforations at 9,048-64 ft. The pool opener is ½ mi. northwest of the abandoned North Gail Wolfcamp pool.

Nebraska—Nebraska Drillers, Inc., and Mar Oil, Inc., No. 1 Stark, section 5-17n-51w, Morrill County, recovered 2,200 ft. of oil and 100 ft. of mud-cut water on 2-hour drillstem test of the J sand at 5,198-213 ft. The prospect is 2¼ mi. north of Gaylord field.

Does the effectiveness of an antioxidant eventually decrease?

Du Pont's Bill Robinson answers an oil man's questions about antioxidants

Q. Does the effectiveness of an antioxidant eventually decrease?

A. Over a period of time the concentration of antioxidant gradually decreases as it does its job of stabilizing the gasoline. Eventually the antioxidant will be completely used up if the gasoline is stored for long periods.

Q. Then how can the antioxidant be of value?

A. Antioxidants function in fresh gasolines by terminating chain-forming initiators that lead to gum formation. When the antioxidant is completely consumed, gum formation can continue, but normally gasoline is used long before the antioxidant is depleted.

Q. How much antioxidant is required to do a good job?

A. This depends upon the gasoline type and the length and severity of storage to which it will be subjected. Antioxidants are effective in very small quantities and usually 4 to 8 pounds per 1000 barrels are adequate. Economy is the reason antioxidants are preferred for eliminating potential gum problems.

Q. How can a refiner tell how much antioxidant he requires?

A. The best procedure is to evaluate the gasoline in 110° F. storage and to establish a correlation between the 110° F. storage and an accelerated test. Accelerated tests by themselves are frequently unreliable, but a useful rule of thumb used by many of the refineries is that the gasoline should have at least a 150-minute increase in induction period due to the addition of an inhibitor.

Q. Can antioxidants overcome the catalytic effect of copper?

A. Not completely, although for practical purposes high dosages of antioxidant will minimize those detrimental effects. This is uneconomical, and the use of Du Pont Metal Deactivator is the preferred treatment to overcome copper contamination of fuels.

Q. Are antioxidants preferred over chemical processes for producing stable gasolines?

A. For most gasolines the answer is yes.

Q. Why?

A. It comes right down to dollars and cents. Antioxidants are less expensive because no expensive equipment or product loss is involved. Antioxidants also provide an "insurance value" to products after they leave the refinery. The antioxidant continues to work even after the gasoline passes beyond the refiner's control.

Q. Can chemical treating and antioxidants be combined?

A. Antioxidants are frequently used to supplement caustic washing and also have been used after more drastic chemical treating procedures.

Q. What are the main classes of antioxidants used in motor gasoline?

WILLIAM T. ROBINSON is head of the Du Pont Petroleum Laboratory's Product Application and Service Division. In this capacity, he supervises technical work on gasoline and fuel oil additives. "Bill" and his associates work closely with refiners on problems concerning the effective use of petroleum additives.

A. There are three that are widely used. These are the phenylenediamine type, such as Du Pont Antioxidant 22; the aminophenol type, such as Antioxidant 5; and the alkylated phenols such as Antioxidant 29. All three classes are potent antioxidants.

Q. Why does Du Pont market three different antioxidants?

A. This is in line with the Du Pont policy of supplying a complete line of additives for petroleum products. All of these antioxidants are excellent and any one may show up to advantage in a particular stock.

Q. What are the advantages, for example, of Antioxidant 22?

A. Antioxidant 22 is approved for use in aviation gasolines and may be used before a caustic wash and over strongly alkaline tank bottoms. Since it is 100% active ingredient it requires less handling and may be used for antioxidant sweetening of low mercaptan stocks.

Q. Which stocks are best suited for Antioxidant 22 sweetening?

A. It is generally considered that full boiling range, catalytically cracked gasolines, and blends of catalytically cracked and straight-run gasolines, are best suited for antioxidant sweetening. Many other stocks have been successfully antioxidant sweetened, but because of the moderate mercaptan sulfur concentrations, the presence of olefins, etc., Antioxidant 22 sweetening is almost universally applicable to cat-cracked gasolines.

Q. If Antioxidant 22 is used for sweetening, are any of its antioxidant benefits lost?

A. Studies have indicated that there is a slight loss of antioxidant, but it is quite small if the system is controlled carefully.

Q. What is the maximum mercaptan sulfur content that can be sweetened with Du Pont Antioxidant 22?

A. This varies according to the stock. There have been several cases of high mercaptan sulfur content stocks being successfully sweetened. However, as a rule of thumb, Antioxidant 22 sweetening should not be applied to stocks having more than 0.01 weight per cent mercaptan sulfur unless the sweetening system is carefully controlled.

Q. In the sweetening process, how early should Antioxidant 22 be added?

A. Generally, Antioxidant 22 should be added as soon as possible after H_2S and thiophenols have been removed by caustic washing. This early addition permits effective mixing and allows more time for the sweetening reaction.

Q. Do antioxidants increase intake system deposits?

A. No, in practical use concentration antioxidants have a beneficial rather than a detrimental effect because they prevent formation of gum which could contribute to intake system deposits.

FOR FURTHER INFORMATION on antioxidants, call in your Du Pont representative or write Petroleum Chemicals Division, E. I. du Pont de Nemours & Co. (Inc.), Wilmington 98, Del.

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Better Things for Better Living . . . through Chemistry

Tetraethyl Lead
and other
Petroleum Additives

POWDERED RUBBER for asphalt roads, dubbed "Surfa-Sealz," is ground to a consistency similar to that of face powder.

FIRST "RUBBER-ASPHALT" ROAD for New Jersey is a 4¼-mile stretch on one side of U.S. 30, 16 mi. outside of Atlantic City. This test section is part of U.S. Rubber Co.'s research program designed to answer the question . . .

RUBBER-ASPHALT, at left, resists stripping from glass block in lab test, while plain asphalt, at right, fails the test.

Can Rubber Help Asphalt Roads?

Refiners will be first on line to welcome back rubberized asphalt, which now appears ready to make a comeback as a more rugged, more consistent, and more usable petroleum product for roads.

There was a time, about ten years ago, when the potential for rubberized-asphalt looked pretty bright. In fact, between 1947 and 1951, about 400 mi. of roads were paved with the material on a test basis. Some of the rubberized-asphalt roads stood up quite well. But some of them flopped. And analysis didn't show why some succeeded and some failed.

As a result, except for special regional test projects, the broad-scale testing of rubber in road asphalts was discontinued in the early 1950s.

Since then, however, basic research has continued on improving the rubber polymer used for blending with asphalt.

A new powdered synthetic rubber polymer, developed by United States Rubber Co., now shows promise of leading rubberized asphalt's comeback.

In the early days of rubberized asphalt, U.S. Rubber, and all other companies interested in making rubber for such a use, were hampered by the fact that the government controlled the synthetic rubber plants. As a result, only a general-purpose rubber was available for use with asphalt.

Now, United States Rubber has had time to develop and produce a rubber polymer specifically intended for use in asphalt.

In the search for a rubber polymer compatible with asphalt pavements, U.S. Rubber researchers found that they were dealing with extremely thin films of asphaltic material which coat the aggregate. From a study of the properties and actions of these films, the company was able to determine the basic physical relation between asphalt, aggregate (the stone, sand, and/or gravel mixture making up over 90% of any asphalt pavement), and road performance.

The final result of these studies was a rubber polymer, in finely divided powder form, which can be added to asphalt paving to give a predictable improvement in road performance. Preferably, the rubber powder is mixed intimately with the hot asphalt coming from asphalt production units.

According to reports on extensive laboratory tests by U.S. Rubber, the new rubber powder will raise the softening temperature of most asphalts, as well as help asphalts to withstand their great enemy, embrittlement (frequently referred to as oxidation).

U.S. Rubber says that blending

asphalt with its new rubber powder (in the proportion of about 95% asphalt, 5% rubber) will change the temperature-susceptibility of the asphalt appreciably. The softening point for "unrubberized" asphalt (the temperature at which the asphalt pavement starts to curl, wave, and bleed) is between 116F and 120F. Asphalt rubberized with the new polymer, U.S. Rubber says, has a substantially higher softening point.

In addition, the company says the new rubber polymer asphalt will withstand weathering far better than plain asphalt. It is the effect of weathering that causes embrittlement of asphalt and eventual cracking.

As a result, the new rubberized asphalt is said to behave better than plain asphalts in preventing many kinds of pavement deterioration.

The company says that stripping from aggregates (separation of the asphalt from the stone when water in the base of the pavement rises by hydrostatic action) is far less of a problem with a rubberized asphalt than with plain asphalt. That's because the rubber polymer-asphalt blends have much higher viscosities and adhesion to the aggregate than regular asphalt at the same temperatures. This retards emulsification of the asphalt by water.

The rubber polymer-asphalt pavements are also said to have better antiskid characteristics than standard asphalt. According to U.S. Rubber tests, the polymer prevents bleeding or flushing of asphalt onto the surface of the pavement. Such bleeding or flushing can cause a slick surface, a skid hazard in wet weather.

U.S. Rubber also claims several other advantages for asphalts that contain its new rubber powder. Among them: retained elasticity, reduced brittleness, and reduced fatigue cracking.

And U.S. Rubber says that rubberized asphalt, using its new polymer, can be pretested to give a positive indication of how it will stand up under actual road conditions.

Since it developed the polymer, U.S. Rubber has made enough tests on the rubberized pavement so that it feels it can interrelate the lab tests and actual field performance quite closely.

The company says this can be done by control of three physical properties —impact strength, low-temperature ductility, and viscosity.

Specifications for the new polymer have been made in a general manner, so that polymers from other rubber manufacturers can be used in the over-all program of rubber-in-asphalt that U.S. Rubber has set up.

The cost for use of the new rubber polymer in asphalt would be relatively minor, according to U.S. Rubber:

The average asphalt pavement costs between $40,000 and $50,000 per mile of two-lane, 24-ft.-wide road. Concrete pavement averages about $12,000 to $15,000 more per mile.

The way U.S. Rubber figures it, rubberized asphalt would add only about $2,500 to $2,800 per mile to the cost of the asphalt pavement.

From the point of view of the oil industry as a whole, such a hypodermic for asphalt sales could help a good deal.

As late as 1956, there were predictions of fat increases in asphalt demand for the years immediately ahead. Asphalt sales in 1956 had risen 10% over the previous year.

But 1957 was a disappointment to asphalt makers. Sales dropped 5% below the 1956 level, according to the Bureau of Mines (PW—Jul.25'58, p47). The slip occurred despite the fact that the Federal highway program was starting to pick up speed last year.

This fall-off in demand was serious enough to prompt some majors to kick off aggressive advertising and promotion programs for asphalts.

The 1958 asphalt sales picture is beginning to look better than last year's. But with a good part of the proposed federal-aid highway system still uncommitted to either concrete or asphalt paving, oil men can well use a stronger argument for asphalt. Rubberized asphalt may provide that argument in some cases.

Question for the oil industry . . .

Will 'Heat Cells' Hurt Fuel Oil?

Will tomorrow's electric power be generated by the mere heating of "thermoelectric" materials? No one knows the whole answer yet, but much recent progress has been recorded in this field.

For over a century, the well known thermoelectric effect (wherein the heating of certain material combinations will produce an electric current) has been relatively dormant. Until recently, the common temperature-measuring thermocouple has been the only major commercial application of the thermoelectric effect.

If researchers continue to improve thermoelectric devices as they have during the past several years, fuel oil—with its large stake in the electric-power generation industry—might feel adverse effects.

It is still too early to determine what effect, if any, thermoelectricity will have on fuel oil sales to the electric-power generation field. At the very least it could mean a partial elimination of steam boilers, but a continued use of current fuel oils. At the most, it could mean entirely changed fuel oil specifications and use patterns.

Newly found thermoelectric materials, with 500 times the electric power output of their thermocouple cousins, have excited the interest of U.S. companies.

Power outputs on the order of 550 millivolts per degree Fahrenheit (degrees above ambient temperature) have been achieved with the newer thermoelectric materials. Of these materials, alloys of bismuth and tellurium and lead seem to be the most promising.

However, present efficiencies are still below those obtained by the mechanical conversion of heat to electricity. Most materials being investigated by U.S. scientists have efficiencies of around 8% in the thermoelectric conversion of heat to electricity. The Russians claim a 10% efficiency.

These efficiencies compare to 30% to 35% for a modern steam power plant, 25% (conversion of available heat energy to mechanical energy) for most automobile engines, 35% for diesel engines, and as much as 70% to 75% for a fuel cell making electricity directly from hydrogen and oxygen (PW—Jun.6'58,p30).

Some industry spokesmen visualize a vast bank of thermoelectric devices, exposed to any heat source, as revolutionizing the technology of electric-power generation.

Such a setup could eliminate the present costly sequence in power generation (burning fuel to make steam to run generators) with its large capital investment and energy losses, not to mention wear and corrosion.

Conceivably, such a development could effect fuel oil markets. It could herald a "decentralization" of the power generation industry into small home units, each supplied with heat by combustion of some petroleum product or coal. Thus, the present expensive and "electrically wasteful" electric transmission lines could be eliminated for many purposes.

Current applications of thermo-

electricity, however, are much more modest, and center mostly around household uses.

Russia seems to have the jump on the U.S. in the design and use of thermoelectric devices, according to published reports. Supposedly, the Russians have produced thousands of oil lamps equipped with thermoelectric devices in the chimney, which furnish enough current to operate a radio. Russia also claims to have marketed a refrigerator that runs on direct current and has a battery of thermoelectric devices that pump the heat out of the box.

The U.S., however, is rapidly closing the gap with Russia in the field of thermoelectricity. Westinghouse is marketing, experimentally, a thermoelectric baby-bottle warmer-cooler, and a hostess cart that both refrigerates and heats.

A spokesman for General Motors Technical Center says that thermoelectric-powered refrigerators will be commercially available in about two years. The initial cost will be high—but probably no worse than the present price differential between color television and ordinary television.

GM, Chrysler, and RCA, to mention a few, are active in applying thermoelectric principles to room air-conditioning. RCA has privately demonstrated a thermoelectric heat-pumping panel for cooling and heating by convection. Heating, of course, is accomplished by simply reversing the direction of current flow.

And the Franklin Institute laboratories of Philadelphia are well advanced in a cooperative effort with eleven, maybe more, major U.S. appliance makers interested in thermoelectricity.

The automobile industry, as well as other phases of U.S. industry and the military, are looking into advanced uses of thermoelectricity.

Auto makers have hopes that thermoelectricity can be exploited to solve a problem of long standing, that of air conditioning cars. By utilizing the presently wasted heat of automobile exhaust gases, thermoelectricity could cool as well as heat automobiles.

The Navy's Bureau of Ships has started a multimillion-dollar research program into the application of thermoelectricity to atomic submarines. As a source of electricity, these devices could eliminate steam turbines, which can be detected by Sonar.

Refineries could utilize the heat from waste gases and steam to generate part of their processing power requirements. And steel mills might be able to salvage part of their fantastically large heat losses.

What's New / IN PROCESSING

Husky Oil Co. plans to more than double the present capacity of its 7,000 b/d refinery at Cody, Wyo.

Expansion of refining capacity of 15,000 b/d and construction of new crude oil and products pipelines will cost the company $12-million to $14-million, according to Glenn E. Nielson, the company's president.

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Imperial Oil Ltd. will build an alkylation plant at its Winnipeg (Manitoba) refinery to reduce the area's dependence on the U.S. for avgas.

The plant, second of its kind for the Prairie Provinces, is to be in operation by November, 1959. Output will be 650 b/d of alkylate.

Engineering work for the plant is under way now, and tenders for construction have been called for. Award of a contract is expected next month, and construction crews will move onto the site by May.

•

Shell Oil Co. will build a natural gas processing and cycling plant in the Weeks Island (La.) oil and gas field.

The plant will be designed to handle 120-million cu. ft. of gas a day, of which about 70-million cu. ft. will be compressed to 6,000 psi. and reinjected into the producing formation via two 12,500-ft. injection wells, which are to be drilled. The remaining capacity of the plant is designed to process gas now produced by the field.

Hydrocarbons will be recovered from the gas by conventional condensate separators and absorbers, yielding gasoline and propane.

•

Humble Oil & Refining Co. has set Dec. 15 as the deadline for acceptance of bids for design and construction of the proposed King Ranch (Kleberg County, Tex.) gas processing and recycling plant.

The plant is estimated to cost $77-million, and will be the largest of its kind in the world, with a capacity of 750-million cu. ft. a day of gas (PW—Mar.21'58,p43).

A selected list of bidders will submit bids for the plant and 240 mi. of 30-in. transmission line to connect the plant with a Humble line in the Houston-Baytown area. Construction of the plant is expected to get under way some time in the spring of 1959.

Texaco Ready to Roll Soon at Anacortes

The Texas Co.'s new Anacortes (Wash.) refinery has started preliminary test runs. Full operation of the 45,000 b/d refinery is planned for around Nov. 15 of this year. The refinery is now receiving crude from the Middle East over the longest wharf on the Puget Sound, extending 5,600 ft. from shore.

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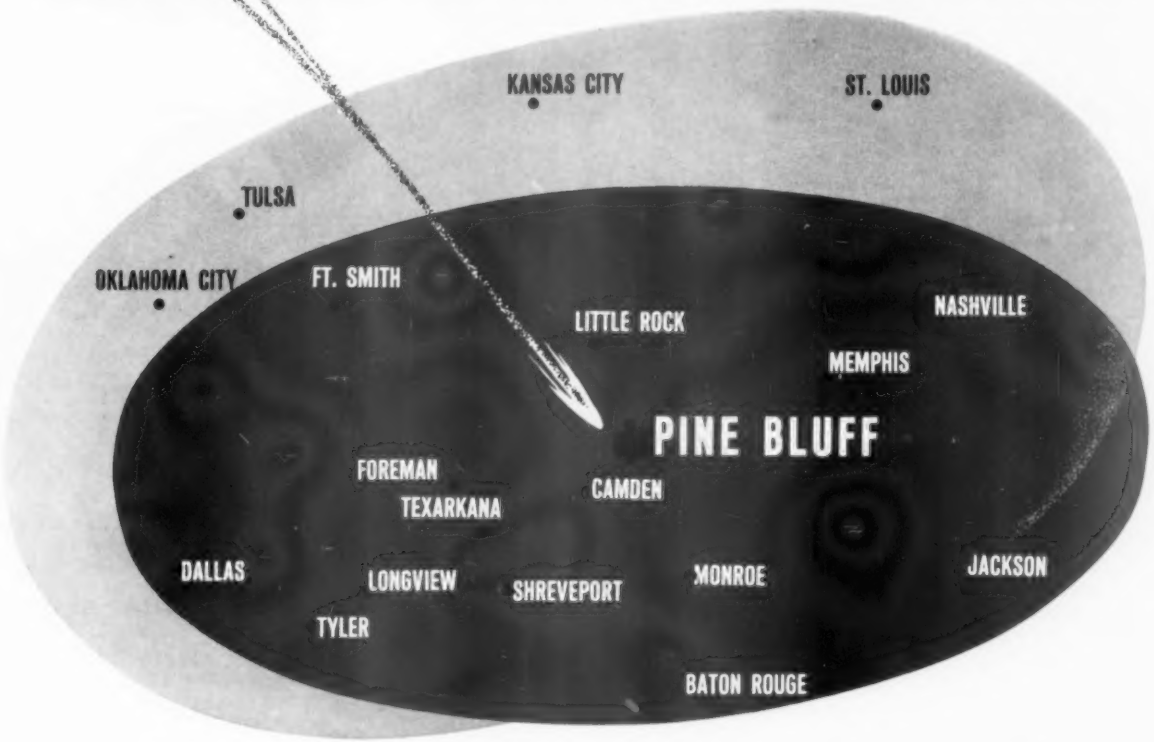

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The Three Candidates . . .

Dr. Romulo Betancourt
Candidate for leftist
Accion Democratica

Rear Adm. Wolfgang Larrazabal
Candidate for liberal, left-center
Union Republicana Democratica

Dr. Rafael Caldera
Candidate for church-backed
Copei (Social Christian)

Venezuela's Election Holds the Key to Oil

- **All three parties in the current presidential campaign favor some important oil policy changes.**
- **But they'll probably be negotiated changes, and take into account the competitive position of Venezuelan oil in world markets.**

CARACAS—Some changes in Venezuela's oil policies are almost certain to arise out of the election campaigning now being launched. But observers here agree that the changes will be neither brusque nor drastic.

Three parties, and three presidential candidates, were slated this week to be in the running in the elections now officially scheduled for Dec. 7.

Prospects for a single coalition candidate faded out of the picture last week, when Rear Admiral Wolfgang Larrazabal, president of the provisional government, finally accepted nomination of the liberal, left-center Union Republicana Democratica (URD).

As a result, the leftist Accion Democratica (AD) is launching its own campaign for election of party leader Romulo Betancourt, president of Venezuela in 1945-1948.

The church-backed Social Christian Copei party had already started active campaigning for its nominee, law professor Rafael Caldera.

All three parties still say they will withdraw their candidates if last-minute agreement is reached on a coalition candidate.

The three parties favor some changes in oil policy—especially a hike in the government's 50% oil profit take. But all signs point to desire for such revision by negotiated agreement with the oil companies.

So far, proposals have been outlined only in general terms. Sharper outlines could emerge in the course of the electioneering, particularly if the campaign unleashes latent, and bitter, political rivalries.

There appears to be no question in Caracas political circles, however, that whatever the outcome of the election, and whatever new policies may be drafted, the Venezuelan government will honor its existing obligations under its present oil agreements.

No one has even suggested revising the petroleum law governing oil operations. And there has been no talk whatever of nationalizing foreign oil properties.

The simplest way of increasing the government's oil take would be by increasing corporate taxes. The petroleum law of 1943 specifies royalty payments and other terms applying to oil concessions, but it does not define the limits of taxes to be paid by the oil companies. The latter are subject to the general corporate tax applying to all businesses.

At the time the petroleum law was drawn up, it was understood that the royalty and other special oil payments, plus the corporate taxes, would give the Venezuelan nation roughly 50% of oil industry profits. In reality, over the past 15 years, it has worked out to a 56-44 split in favor of the government on an industrywide basis.

While there is nothing to prevent the government from raising general corporate taxes, such a rise would be regarded as a "moral" violation of the intent of the 1943 petroleum law.

Venezuelan political leaders have so far been wary of discussing such a course. No party has thus far committed itself to any specific formula.

I. The Candidates

What focuses particular interest on the presidential candidates is that

...The Oil Issues...

- **A bigger government share of oil profits**
- **A government voice in production planning**
- **Government representation on company boards**
- **A national oil company**
- **A national tanker fleet**
- **National monopoly of domestic marketing**
- **More refining in Venezuela**

Policy Shifts

most of the proposed oil-policy changes would be matters for executive decision, since no change in the oil law is contemplated.

• The AD's Betancourt is the most familiar, among the candidates, with petroleum problems. During the AD's 1945-48 administrations, he gave final shape to Venezuela's present 50-50 policy. He is also author of a voluminous analysis of Venezuela's oil industry that was published in Mexico last year. Despite the traditional strength of the leftist AD, Betancourt's chances of winning the presidency are cut by Larrazabal's candidacy. At present, however, it looks as if the AD may win the Congress even if it loses the presidency.

• Larrazabal's own policies have not been defined, though he is regarded as a moderate. But chances look good that his personal popularity may carry him to the presidency in spite of mounting criticism of what is regarded as his "softness" towards Communists.

• Copei candidate Caldera can't be counted out of the race, however. He has earned popularity by staying home in Venezuela and opposing the Perez Jimenez regime while other dissidents went into exile. As far back as 1955, for example, he spoke out for a greater government share of oil profits.

The Communists will probably support Larrazabal, and the URD, against the leftist AD and the church-backed Copei.

II. Party Policies

The most specific oil-policy program to date has been advanced by Accion Democratica's Betancourt.

He points to oil company earnings of 32% on net investment last year and urges that a new division of profits be discussed.

Betancourt admits that any changes in 50-50 must be studied carefully, bearing in mind the competitive position of Venezuelan producers in world markets.

What he has in mind is a negotiated, cards-on-the-table revision of relations between oil companies and the government. He told an audience of Maracaibo businessmen that oil reform can be achieved "in an atmosphere of business bargaining."

"The question," he said, "is not one of making oil an explosive political issue, but of acting as owners of a valuable resource in commercial discussion with the persons administering and developing that resource."

Betancourt's oil program proposes:

• A government voice in oil company production planning. Betancourt —and others—urge that Venezuelan production be limited to the present output of 2½-million b/d in the interests of more orderly economic development.

• Establishment of a government oil-producing company.

• A ban on further concessions, as a corollary to setting up a national company.

• Creation of a government-controlled national tanker fleet. Betancourt opposes granting any special privileges to private Venezuelan tanker companies, such as one now being promoted. Experience shows, he says, that such companies would be absorbed by "powerful international companies."

• Expansion of government refining activities beyond the present small Moron plant.

• A national monopoly on domestic marketing.

The tentative oil platform of Union Republicana Democratica so far is similar to the Betancourt program, with some differences. It wants:

• Government representations on oil company boards of directors.

• Domestic refining of 50% of the oil produced in Venezuela.

Another difference from the AD program is that URD has not yet defined its position on new concessions, and is not expected to urge a ban.

URD's basic policy is described as "nationalism." This was defined recently by party leader Jovito Villalba as "the liberation of Venezuela from the yoke of imperialisms that bind it to the capital monopolies of petroleum and iron."

Copei's Caldera has taken a more cautious approach to the issues of more government oil profits and government oil operations, though he reflects the party's "let us be masters of our petroleum" philosophy.

In his speech accepting the nomination, Caldera called for a bigger government share of oil profits, and, in general terms, for an effort to make the oil industry "less foreign and more Venezuelan."

He said Copei "looks with sympathy" on projects to establish a national oil company and tanker fleet. But he warned that Venezuela should move in this direction "with its feet firmly on the ground."

III. The Outlook

In some respects, conditions are favorable for a policy change in Venezuela. The Middle East—the only other area in the world with large quantities of exportable oil—is in turmoil, and Venezuela's bargaining hand is correspondingly strengthened. The precedent of new oil formulas now evolving in the Middle East is also in Venezuela's favor.

United Arab Republic President Nasser beamed a special message of friendship to Venezuelans recently—a tacit implication that Venezuela and the Arab states could benefit by well-timed pressure on oil companies.

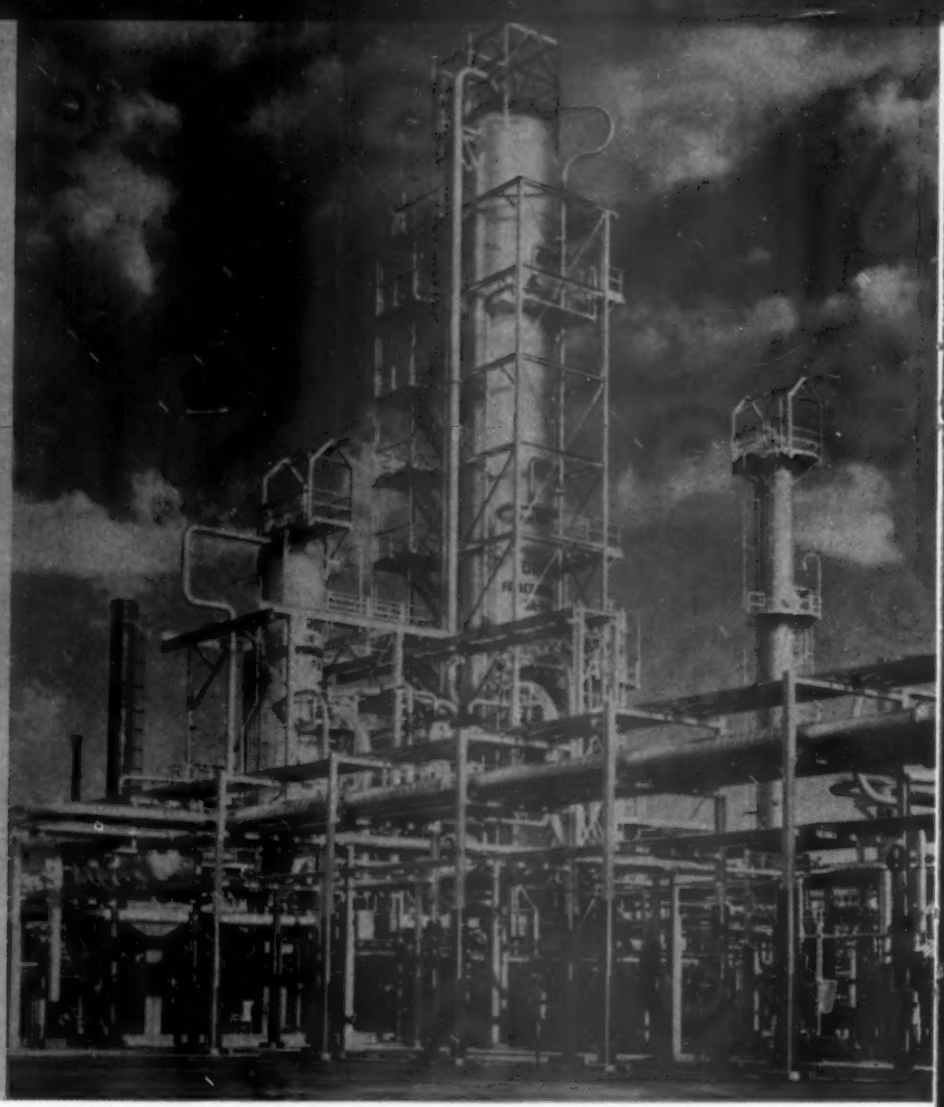
Venezuela has also been invited to participate in the Pan-Arab Oil Congress in Cairo Apr. 15.

On the other hand, a period of world oil surplus seems hardly an opportune time for pressing the question of a new division of oil profits —particularly since Venezuelan oil is already higher-cost than Middle East oil. And Venezuela has no bait to offer —unless it decides to offer more concessions.

Minister of Mines & Hydrocarbons Perez de la Cova, chief defender of the status quo, foresees no abrupt change—merely a "refinement" of present policy.

His ministry, he says, is carrying out a series of studies on various aspects of oil policy to serve as the basis for

New Overseas Engineering-Construction Team



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the decisions of the next government.

He also plans to start a series of conferences on the oil question with political leaders, newspaper publishers, and business and civic leaders. His purpose: to teach some of the oil facts of life to the generally ill-informed Venezuelan public.

Oil men agree that some form of increased corporate income tax is one of the most likely developments. But they hope that any tax hike will—as Betancourt proposes—take into account the competitive position of Venezuelan oil in world markets.

Oil companies would probably put up their strongest fight against any proposal to include government representatives on their boards. They feel that this would be unwarranted interference with management, since the government already has extensive powers of supervision and control, including detailed inspection of company accounts. "The Ministry of Mines & Hydrocarbons can practically open our mail," one oil man observes.

Projects such as a national oil company, tanker fleet, and refinery are regarded by oil men as strictly Venezuelan matters, dependent on how the government decides it can best spend its money.

IV. The Pressures

The political positions that the parties are taking, which make some change appear inevitable, have developed under the stress of three major internal pressures.

The first pressure is the desire for more government revenue.

Revenues from oil totaled $1.3-billion last year, and Venezuelan per-capita income is the highest in Latin America.

Yet half the population is illiterate and impoverished. And the government says it is hard-pressed for money to pay off debts and to carry out development programs.

At the same time, Venezuelans are almost obsessed by the fear that oil reserves (15-billion bbl. proved at the end of 1957) will be depleted, and that the country will find itself with only the memory of a transient boom. They firmly believe that higher oil revenues provide the only chance to effect social reforms and to build a viable economy based on agriculture and industry, which would be capable of sustaining prosperity after the oil gives out.

National pride is another pressure, and politically the most potent factor in the oil situation. It is the prime motivation for the proposed national oil company, which Venezuelans feel would be an important step toward "dignification" of the nation, as one writer puts it. Here, profit considerations are secondary.

The mood is expressed by URD leader Villalba: "After 50 years . . . it is shameful that we Venezuelans continue to participate in the petroleum industry only as peons and collectors of royalties."

And Copei candidate Caldera, too: Venezuela must exchange its role of "an oriental potentate waiting to be handed his millions from oil" for a more active participation in the industry.

The domestic marketing monopoly also is proposed to "conserve our unmistakable physiognomy as a nation," as Betancourt puts it.

If, as presumed, it would take over some 1,200 retail outlets of Creole and Shell, it would inherit financial problems. Those companies claim heavy losses in sales of price-controlled regular gasoline. And, as in Mexico, product prices would probably become a political issue.

The national tanker fleet proposal, strongly supported by labor unions, also holds out prestige value, though it appears one of the least attractive projects from an economic standpoint, due to high wage scales and generally high operating costs.

A third set of pressures for oil change arises from Venezuela's efforts to achieve democratic stability. In some Venezuelan thinking, oil appears as both cause and instrument of cure of the lack of such stability.

The argument tracing this connection goes something like this: Petroleum has distorted the economy of Venezuela, which imports practically everything else.

Oil has resulted in a highly centralized government dispensing largesse from its huge revenues; a glittering capital and a neglected hinterland; and a series of severe social stresses that could explode in violence.

Control of the rich, centralized government is a tempting target for military adventurers, and the strategic importance of oil reserves tends to encourage authoritarian regimes in Venezuela, the argument continues. At the same time, big foreign investments tend to generate political pressures from outside. As long as this situation continues, Venezuela will have difficulty in maintaining stable, democratic institutions.

The remedy for these ills—so this reasoning goes—lies in building up a balanced, more self-sufficient economy; diffusing political power by stimulating industry and agriculture in the interior; providing such services as schools, housing, and hospitals to ease social tensions; and moving directly into the oil business and other basic industries to counterbalance outside economic and political pressures.

The only way Venezuela can pay for all this, those holding this philosophy conclude, is out of its oil revenues.

Aramco Board Is Revamped

Arabian American Oil Co.'s field management in Saudi Arabia is now set to play a major role in over-all company management under a reorganization of its board membership.

Seven Aramco vice-presidents—all but one stationed in Dhahran—have been elected to the board, in what was announced by chairman Fred A. Davies last week as "a move to bring field management into greater participation in board affairs."

The seven are: P. H. Arnot, T. C. Barger, R. I. Brougham, R. A. Eeds, R. S. Hatch, L. M. Snyder, and J. H. McDonald. The latter is headquartered in New York.

The total membership of the reorganized board remains at 13, but representation of the four parent companies has been reduced from ten altogether to one each.

Aramco's own representation is increased to nine. Its previous representation was three, including the chairman, the president, and one vacancy left by the retirement of Floyd W. Ohliger.

The previous parent representation was based on proportionate ownership of Aramco. It included one member from Socony Mobil Oil Co., and three each from The Texas Co., Standard Oil Co. (N.J.), and Standard Oil Co. of California.

Of the parent-company directors, those remaining on the board are: Robert Siegel, of Socony; Harvey Cash, of Texaco; Howard W. Page, of Jersey Standard, and G. L. Parkhurst, of California Standard.

Those supplanted by six of the new Aramco appointees are: J. W. Foley and A. C. Long, of Texaco; D. A. Shepard and M. A. Wright, of Jersey Standard; and R. G. Follis and T. S. Petersen, of California Standard.

At the same time, Aramco president Norman Hardy has been designated chief executive officer. He was formerly the chief administrative officer.

Davies remains as board chairman.

What's New / AROUND THE WORLD

Another Record for Mideast Oil Output

Iran, Iraq, and Kuwait all broke their oil output records in September, to push the Middle East total to a new high for the second month in a row.

Iraq's average, climbing steadily since restoration of its pre-Suez flow, neared 800,000 b/d, while Iran topped 900,000 b/d (PW—Oct.24'58,p44).

In Kuwait, the September record topped the previous high, set last April, by some 44,000 b/d. Saudi Arabia gained slightly, but averaged below previous highs.

The totals, in 000 b/d:

	Sept. '58	Sept. '57	Aug. '58
Kuwait	1,441.6	1,283.6	1,378.7
S. Arabia	1,080.0	1,055.0	990.9
Iran	904.0	766.0	879.0
Iraq	797.2	586.9	787.0
Qatar	174.0	156.4	168.8
Total	4,396.8	3,847.9	4,204.4
9-Mo. Avg.	4,076.7	3,334.5	——

•

VENEZUELA—The second Gulf of Paria offshore wildcat has been plugged and abandoned about 4 mi. northwest of the discovery well brought in by Paria Operations, Inc., a five-company venture.

The rig is now being moved 8½ mi. farther to the northwest for the third wildcat projected by the group (PW—Jan.31'58,p17).

Continental Oil Co., 25% participant in the venture, disclosed this week that "several" development wells will be drilled starting early next year in the vicinity of the discovery well. This was recently described as an "excellent" producer, with indicated production of "at least" 2,000 b/d. Texaco and Ohio Oil also each hold 25% interests. Cities Service holds 16⅔% and Richfield 8⅓%.

•

VENEZUELA—The Sun Oil group is the first of the Venezuelan newcomers to surrender Colombian border acreage it was obligated to take —along with its Lake Maracaibo concession.

No wells were drilled on the 24,710-acre tract in which Atlantic Refining and Texaco Seaboard had 45% and 10% interests respectively. Creole and Shell were the first firms to surrender similar "obligatory" acreage, this summer.

•

CZECHOSLOVAKIA—An 18-year agreement for increasing volumes of crude oil imports has been signed with the U.S.S.R.

Imports from Russia, which were 24,000 b/d in 1957, are due to reach 110,000 b/d in 1965, and 234,000 b/d in 1975. Refining capacity will have to be substantially boosted to handle the crude.

•

PANAMA—A second wildcat has now been started by Champlin Oil & Refining, 40 mi. west of its first, an offshore test in the Chiriqui Lagoon.

The Ft. Worth company temporarily suspended the first wildcat, the No. 1 Anita Bay, at about 9,700 ft. The second, No. 1 Agua Cay, is now below 900 ft. Southland Royalty Co. and Kerr-McGee Oil Industries each hold ¼ interest in the venture.

•

BOLIVIA—Big Chief Drilling Co., of Oklahoma City, is taking on its first foreign work in Bolivia, under a series of drilling contracts with the government oil company.

It has set up a Bolivian subsidiary and is shipping its first rig—capable of drilling to 18,000 ft.

•

GUATEMALA—Two new applications for rights to build refineries in Guatemala have been submitted by U.S. firms.

Ralph M. Parsons Co., of Los Angeles, is interested in putting up a 10,000 b/d plant. The other application was submitted by Litwin Engineering Co., of Wichita, Kan. The two requests are under consideration by the government. It recently approved a plan for a 3,500 b/d refinery to be built by Breaux Bridge Oil Refining Co. of Breaux Bridge, La., with Royal Dutch Shell participating (PW—Oct.3'58,p72).

•

USSR—Two refineries of undisclosed capacity are under construction in eastern Siberia, according to Tass, the Soviet news agency.

A refinery at Irkutsh, slated to produce some products for export to Red China and Mongolia, is scheduled to go on stream next year. Another plant, in Krasnoyarsk, is still in the early stages of construction. Both plants will eventually be supplied with crude from the Volga-Ural basins, via a trans-Siberian pipeline slated to be completed in 1961.

•

USSR—An East German technical mission is now in Moscow to help draw up plans for a projected 2,500-mi. pipeline to East Germany from the Baku fields.

The 100,000 b/d line will carry crude to refineries and petrochemical plants that East Germany plans to build with Russian aid under its 1961-65 five-year plan.

•

VENEZUELA—Initial oil production has been found on Block 17 in Lake Maracaibo by an eight-company group.

An announcement last week gave no details on results to date on the block, which is the farthest south and west of any lake acreage thus far tested.

Participants are Phillips Petroleum, Sunray Mid-Continent, Ashland Oil & Refining, Kerr-McGee Oil Industries, Western Natural Gas, El Paso Natural Gas, Pacific Petroleums, and Canadian Atlantic Oil. The same group holds South Monagas Lot 9, where five tests have proved large reserves of low-gravity oil.

•

GUATEMALA—Mar. 15 has been set as the date for spudding the initial wildcat projected by a four-company group headed by Ohio Oil Co. (PW—Oct.10'58,p44).

Brown International Drilling Co. is the contractor for the test, No. 1 Chinaja. It may be carried to 13,000 ft. on the Arruga Grande anticline, on a 109,539-acre unitized tract in Peten and Alta Verapaz. Ohio Oil, Amerada, Continental, and Union Oil of California each hold 25% interests.

•

BRITISH HONDURAS—Phillips Petroleum, now making its first move into Central America, plans to start a wildcat in southern British Honduras by the end of the year.

The company has taken over about 2-million acres of oil rights, including offshore areas, that were acquired earlier this year by Bandini Petroleum and West Caribbean Oil Co., Los Angeles independents (PW—Mar.21'58, p54).

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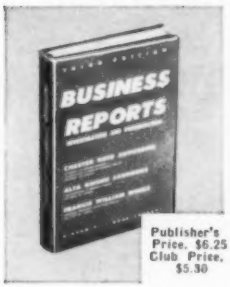

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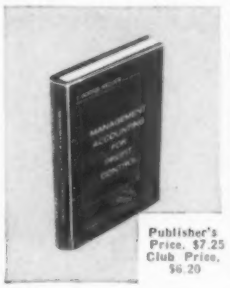

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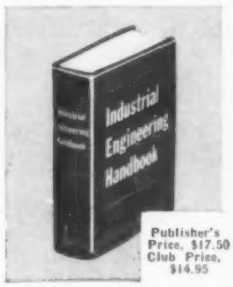

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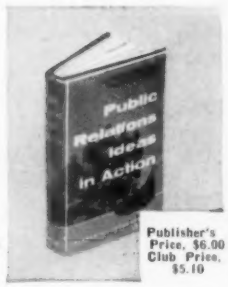

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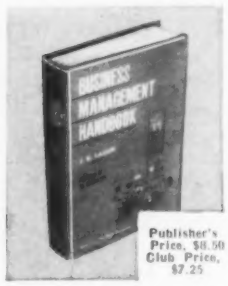

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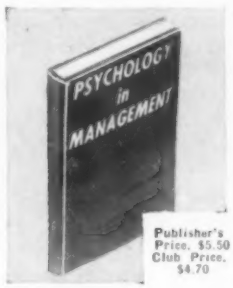

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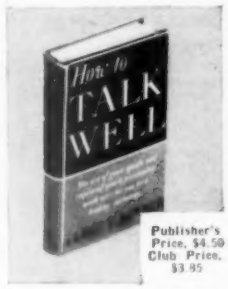

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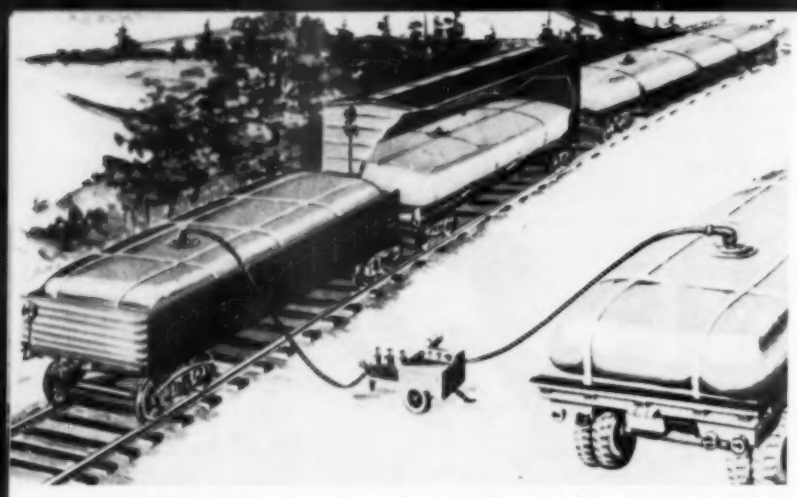
PWK—10—31



OVER LAND, the military is preparing to bring petroleum products to a battle area in collapsible, rubber-like containers inside rail cars.

AMPHIBIOUS fuel transportation as provided by the Army's new "Goer" would also be necessary. The "Goer" can carry up to 5,000 gal. of fuel.

AIR DROP from helicopters would bring fuel to military vehicles inaccessible to other fuel carriers.

Fuel Distribution Methods Could Win or

Current Army research on battlefield distribution of petroleum products may some day produce an important side effect—a more efficient peacetime oil transportation system.

Admittedly, many of the Army's potential battlefield petroleum movers won't have application in peacetime domestic service. And other Army projects, which might have use in improving domestic oil transportation, are still in earliest stages of research.

Still, what the Army is learning about fast, efficient movement of petroleum products can be important news to many oil transporters.

Every effort is now being made to make battlefield petroleum distribution as efficient as possible because it will have "a decisive influence on the success or failure of our forces in combat," Col. J. R. Maedler, chief of the petroleum division of the Office of the Quartermaster General pointed out earlier this month.

Maedler's division is handling research on such systems. He described the military need for such petroleum distribution this way:

Modern weaponry has made necessary a petroleum battlefield distribution system which is practical, reliable, flexible, and one in which maximum dispersion makes it relatively invulnerable.

"The scientific advances of this age," Maedler pointed out, "have not only given armies new explosives of tremendous power, but also the ability to deliver them with accuracy at ranges far beyond previous capabilities."

Said Maedler, "In nuclear war . . . the dispersion that we must accomplish to avoid offering profitable targets to the enemy firepower, is . . . the only available countermeasure."

Such a system would need a quickly constructed, automatically operated main pipeline grid.

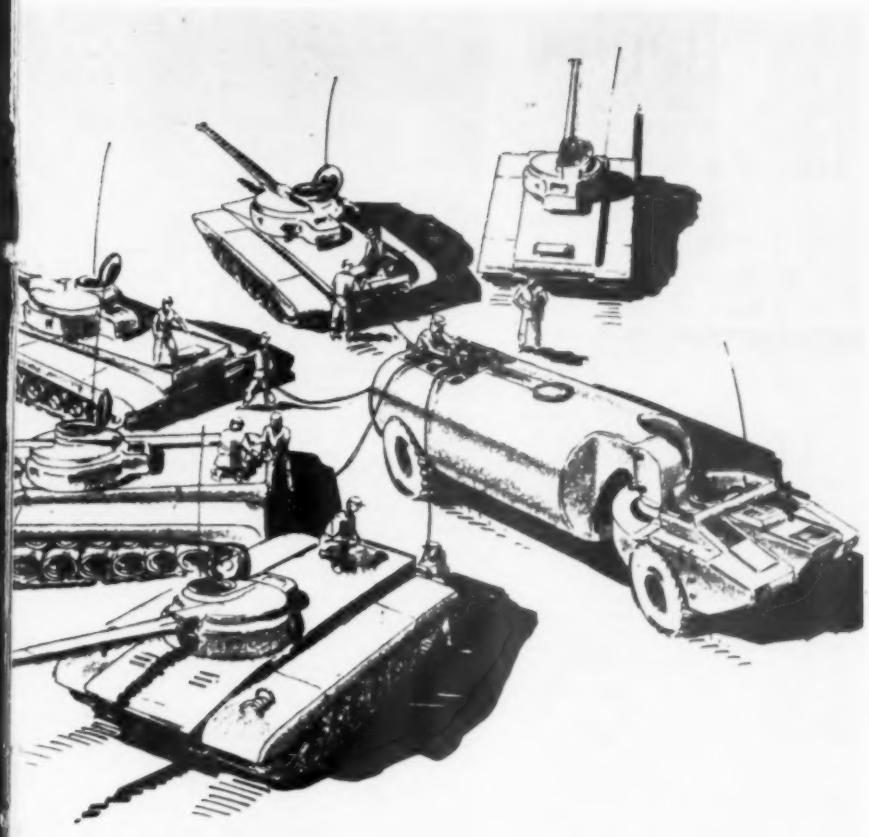
The Army now has under development an automatic induction welding system which would insure fast construction of such a system.

Automatic operation of such a pipeline, the Army feels, should include programming and flow of products; report of location of various products in the system; and diversion of product.

Small-diameter rubber-hose lines could take the product from the main line to points of use.

These lines would also have to be put down quickly. The Army has just finished tests of such lines, and says they have "good possibilities."

A necessary supplement to the pipeline system would be amphibious



SIMULTANEOUS FUELING of five armored vehicles would be necessary under tomorrow's wartime conditions. Hose reels, pump, and motor fit in the rear of the tanker.

Lose Tomorrow's Battles

tankers, which could carry fuel directly to waiting vehicles.

The Army's "Goer," just such an amphibian, has a 5,000-gal. metal tank and five fuel hoses on automatic-rewind reels. Minimum discharge capacity of each hose is 250 gal. per minute.

The "Goer" has already been field-tested.

Fuel might also be brought to the battle area by rail cars, barges, or aircraft "converted" into petroleum carriers by use of collapsible, rubber-like containers.

Such containers could also be used to convert gondola rail cars or flat-bed semitrailer trucks into bulk carriers.

Smaller containers, with 500-gal. capacity, could also be airlifted by helicopter to vehicles out of the reach of pipelines, trucks, or amphibious tankers.

Even more efficient means of moving battlefield fuel are already under study.

According to Maedler, "These methods may take the form of a device that automatically digs a trench in any type of terrain, creates a fuel carrier or pipeline in the excavated material, lays it in place in the trench, and covers it over.

"Or it may be a device that, when armed with preset instructions, could be started at a given point . . . and bore its way underground (employing a disintegrator principle) to a predetermined point several hundred miles away . . . meantime vitrifying the walls of the bore to enable the bore to act as a pipeline."

Science fiction? The Army can't afford to think so:

"We must be adaptable to any situation."

What's New
IN TRANSPORTATION

The first "natural gas tanker" is ready for sea trials.

The "Methane Pioneer," a 3,000-ton vessel newly converted from dry cargo service to carry an experimental cargo of liquefied methane across the Atlantic, is about to begin three months of testing "in and around the Gulf of Mexico."

If all goes well, the ship will sail early next year from Lake Charles, La., to deliver gas to the North Thames Gas Board, at Canvey Island Marine Terminal, near London (PW—Dec. 20'57,p85).

•

Transcontinental Gas Pipe Line Corp. has asked the Federal Power Commission for approval of a $51-million expansion plan, which would be the first step toward another Gulf Coast-to-East Coast mainline.

The current proposal includes building 149 mi. of 36-in. main line loops and 34 mi. of 20-in. and 24-in. loops on gathering lines; two compressor stations; and additional compressor horsepower at eight existing stations.

This expansion would enable Transcontinental to supply an additional 82-million cu. ft. of gas daily to 43 customers, plus an 8-million cf/d increase for Sun Oil Co. which now takes about 20-million cf/d.

•

"The largest merchant vessel ever built in an American shipyard"—Stavros Niarchos' 70,700-ton "Princess Sophie"—will be christened by Queen Frederika of Greece Nov. 15.

The ship, named after the elder princess of Greece, will be able to carry 643,000 bbl. of crude in the Persian Gulf-to-West Coast trade. It will fly the Greek flag.

The ship, too large for the Panama and Suez Canals, is expected to make six voyages a year over its 12,000-mi. Indian Ocean-Pacific Ocean route.

A 23,000-hp. engine will give the "Princess Sophie" a speed of 17 knots.

•

Floating hose will be used to unload tankers at the Frobisher Bay Arctic air refueling base.

A 600-ft. length of 8-in. hose will be used at Frobisher to deliver 4,500 gal. of product per minute. The hose will float on pontoons when in use. It's made by the Quaker Rubber Division of H. K. Porter Co.

Grease Market Is Slipping

Total consumption of automotive greases for passenger cars, trucks, and buses will decline 48% by 1965 if expected technological advances materialize, according to a new estimate.

This and other predictions were made by W. M. Drout, Jr., manager of marketing economics for Esso Standard Oil Co., before the National Lubricating Grease Institute meeting in Chicago this week.

Drout's predictions are based on a compilation and analysis of data collected by National Petroleum News (a McGraw-Hill publication), Chek-Chart Corp., Esso, and private surveys.

The most dramatic drop will be a 67% decline in grease consumption for passenger cars.

Grease consumption by passenger cars grew rapidly from 1948 to 1956, climbing from 86.1-million lb. to 120.2-million lb. Estimated consumption for 1958, however, is only 106.2-million lb.—the beginning of an expected rapid downturn. Passenger car grease consumption is expected to sink to 39.8-million lb. by 1965.

The effects of technological improvements will not hit so hard at grease consumption for trucks and buses. This market is not expected to decrease much more than 20% through 1965. Drout attributes this to the fact that the convenience of fewer grease fittings is not such an important factor in selling trucks and buses.

The auto industry's race to eliminate all grease fittings is the biggest factor in the gloomy outlook. Manufacturers expect to have a frictionless bearing within three to five years.

The number of auto chassis fittings requiring grease has been reduced 56% in the past seven years, says Drout, and this has only spurred auto companies on to further study. Auto experts feel that complete elimination of fittings is only a matter of time. Even doubling the estimated time this will take (to five to ten years) leaves a gloomy outlook for automotive grease consumption.

"The perfect solution to most greasing problems," says Drout, "would be the development of a low-cost, long-life, frictionless bearing, which could be sealed against the intrusion of foreign bodies. Each auto company hopes that it can gain a competitive advantage by being first to develop a car that does not have to be greased."

The effect of this development alone on grease consumption, measured in terms of cars on the road, will be a 67% decrease by 1965. This is based on an expected drop in the average number of fittings in all cars on the road from 21 in 1957 to about 7 in 1965.

Even if it takes ten years to eliminate fittings from new cars, passenger car grease consumption would decline 52% from this cause alone by 1965, Drout predicts.

Furthermore, the average grease interval will be stretched to 2,700 mi. by 1965, according to Drout.

Drout pointed to studies showing that most motorists (70% to 90%) get a grease job and oil change simultaneously—at a point somewhere between 1,000 mi. and 2,500 mi. (This estimate may be low; the last two motor oil ratios reported by NPN show an average oil-change interval of about 2,732 mi.) According to Drout's calculations, the upward trend in this interval will have the net effect of curbing passenger car grease consumption by about 30% in ten years.

Another factor is the leveling off of total annual mileage per passenger car in the years ahead.

Even a leveling-off prediction may be optimistic, he reasons, since the growth of two-car families will tend to divide total family mileage between two vehicles.

The only positive factor is the projected growth in vehicle registrations, and that isn't enough to compensate for lost sales due to other factors, Drout says.

The growth in number of vehicles, considered by itself, would boost the automotive grease market by 30% by 1965.

The one flicker of hope for continuing growth in automotive grease consumption is an improved grease, which might delay the advent of a frictionless bearing.

The extremely high cost of developing and utilizing friction-free or permanently lubricated bearings could delay or indefinitely postpone their use, suggests Drout. An effective countermeasure might be the development of a grease with improved properties—such as a longer interval between required greasing.

"If oil companies come up with a grease that doesn't wash out and that seals out foreign bodies from the bearing, we might see a positive growth rate in automotive grease consumption," he says. "Increasing the grease interval to 4,000 mi. or to 8,000 mi. would be better than having no fittings to grease at all."

What's New
IN MARKETING

The octane issue is simmering on the West Coast again. Now an independent marketer has added a superpremium gasoline in the 100-plus octane range.

All through the multigrade decision-making, West Coast marketers appeared to be settled on a two-grade system of marketing. Some majors have consistently made a special effort to "play down" the octane issue in gasoline advertising.

Then came Tidewater's "100-plus" ad campaign—with its challenge to an octane race (PW—May16'58, p62). There were no takers until Richfield moved in with its "100-plus boron gasoline" campaign (PW—Oct.10'58,p43). Now Time Oil Co. is selling a 100-plus-octane fuel—in addition to its "Platinum" premium and "Super" regular grades. Time's new superpremium is made by U.S. Oil & Refining Co., Tacoma, Wash.

•

A program leading to a degree in petroleum marketing will be offered by the University of Tulsa, beginning early next year. Some 16 oil firms are backing the program.

The program was set up by a committee of marketers, headed by B. R. Davis, manager of dealer and distributor relations for D-X Sunray Oil Co. Seven oil companies have offered to give a total of 18 part-time and full-time jobs to students in the program.

Courses will lead to a bachelor of science in business administration and a master of business administration. The undergraduate course requires 134 semester hours, including 13 in petroleum marketing. A special two-year certificate will also be offered.

•

Delhi-Taylor Oil Corp., Dallas, has opened three new terminals in North Carolina—in a move to extend its southeastern marketing. The terminals and their capacities are: Charlotte, 133,000 gal.; Greensboro, 120,000 gal.; Wilmington, 148,000 gal.

DEPT/Personals

J. G. Coates

J. W. Streit

J. G. COATES has been appointed manager of domestic crude oil supply in Gulf Oil Corp.'s new crude oil department, Western Hemisphere, and **J. W. STREIT** has become assistant manager of the domestic section. Coates succeeds **C. H. Osborne,** manager of crude oil supply in the crude oil and products supply department, who is retiring. Coates and Streit will be located in Houston, and will report to **W. H. Blackledge,** manager of the Western Hemisphere crude oil department, in Pittsburgh.

FRANK D. STOCKMAN has been named manager of the reserves and availability division, and **VINCENT E. MARTINSON** manager of the underground storage division, in the gas supply department of Northern Natural Gas Co., Omaha. Stockman, associated with Phillips Petroleum Co. before joining Northern in 1956, will be responsible for Northern's natural gas reserves and for the company's rate of production. Martinson, with Northern since 1949, will be responsible for the operation and further development of Northern's Redfield (Iowa) storage field.

FRED O. SHARP, JR., has been named general manager of Feldman Oil & Gas, Dallas, and executive vice-president of Worldwide Petroleum Corp., Ltd., Feldman's international affiliate. Sharp, with Feldman since 1952, will also head the executive committee for the Feldman companies. **Harold N. Smoot** succeeds Sharp as executive assistant and coordinator of the Feldman organization. Smoot formerly directed a portion of the organization's property acquisition program. **J. Lawrence Lee** is the new manager of the primary production department, and **R. H. Angevine** manager of the secondary recovery department, for Feldman and Worldwide.

GLEN E. WILSON has been appointed director of employee and public relations of Goodrich-Gulf Chemicals, Inc., in Cleveland. Wilson, with Goodrich-Gulf since 1956, was most recently director of employee relations.

RUSSELL L. CHARLES has been named head of the general purchasing section, and **DONALD R. WILKINSON** senior buyer in charge of the technical purchasing section, in the purchasing division of Standard Oil Co. (Ohio). The two sections were part of the Cleveland office purchasing function, before it was divided into general and technical areas. In 1949, Charles was appointed section chief of inventory and salvage in the purchasing division of the supply and distribution department. In 1956, he became the division's senior buyer, a title he will keep in the new organization, but with increased responsibility. Wilkinson, a group engineer since 1955, will be responsible for all purchasing activities related to automotive, construction, and other technical or specialty items.

JOHN P. McKEON has become trust manager of Shell Oil Co.'s provident and pension trust, with offices in New York. **F. R. Hummert,** formerly an assistant treasurer, succeeds McKeon as assistant manager of the fund and trust. **J. E. Peck** succeeds Hummert as assistant treasurer, and **H. T. Richards** succeeds Peck as manager of the analysis and statistics department. **K. L. Baker,** formerly chief accountant in the financial accounting department, succeeds Richards as assistant manager of the marketing accounting department.

TRUMAN H. GISH was named vice-president in charge of sales for Naph-Sol Refining Co., Muskegon, Mich. Gish has been sales manager of the company for the past five years.

W. E. BOYD has been appointed district superintendent of British-American Oil Producing Co.'s southern district, with headquarters in Houston. The southern district includes southeastern Texas, Louisiana, southeastern Arkansas, Mississippi, and Alabama. Before joining British-American, Boyd was division drilling engineer in Gulf Oil Corp.'s Houston production division. He has also been assistant general manager of Kuwait Oil Co., Kuwait.

H. R. SEGNAR was named manager of Phillips Petroleum Co.'s land and geological division at Oklahoma City, succeeding **I. J. Pierce,** who recently resigned. Segnar has been Phillips' regional geologist in Bartlesville.

DR. ROBERT W. SCOTT has been named research associate of Esso Research & Engineering Co., Linden, N. J. Scott is a member of Esso Research's technical information division, and has been with the company for 16 years. He is currently on special assignment with Esso Standard Oil Co. in connection with a market research project.

G. WARD DISBROW, JR., was named traffic manager of river operations for Ashland Oil & Refining Co., Ashland, Ky., succeeding **John H. Fox,** who recently resigned. **Jack Ditty** and **Jerry F. Boyles** were named assistant traffic managers. **Robert L. Gray,** transportation manager of river operations, shares responsibility for river operations with Disbrow. Gray is assisted by **Ben F. Tracy, Jr.,** and **Chester H. Walters. Paul M. Kinnaird** succeeds Disbrow as manager of the supply and distribution department, and his assistant is **Stephen E. Berger.**

O. J. GLASMAN was elected assistant comptroller of Standard Oil Co. (Ind.), in Chicago. Glasman was named administrative assistant to Indiana Standard's president in 1955, and in 1956 became assistant manager of the organization department.

BEN C. BELT has been elected a director of Delhi-Taylor Oil Corp., Dallas, succeeding **G. L. Rowsey,** who has resigned. Belt retired in 1955 as vice-president and managing executive of Gulf Oil Corp.'s Houston production division. **C. H. Hobbs** has been appointed to the newly created position of executive assistant to Delhi-Taylor's president. He will also continue as Delhi-Taylor's corporate secretary. Hobbs is assuming part of the duties formerly held by **P. T. Bee,** who recently resigned as executive vice-president. **G. B. Lintner,** treasurer, was also named controller, and **W. C. Smith,** production vice-president, was named exploration division coordinator. Both men assume part of Bee's former functions. **James L. Sewell,** president of Delhi-Taylor, takes over Bee's general management functions, including direct contact with operating vice-presidents and the treasurer-controller. **Fred P. Sewell,** vice-president of manufacturing and marketing, will move his headquarters from Corpus Christi to Dallas, where Delhi-Taylor's executive offices are now located.

B. C. Belt

R. L. Sullivan

ROBERT L. SULLIVAN was named gas superintendent for Sun Oil Co.'s Southwest production division, in Dallas. Sullivan, assistant division gas superintendent at Dallas since 1956, succeeds **Gerald B. Bennett,** who has left the company. **John E. Walke** and **Aubrey V. Hamilton, Jr.,** were named assistant division gas superintendents in Dallas. Walke, formerly division gas engineer, is responsible for plants and operations; Hamilton, special assistant in Dallas since 1957, handles contracts and sales for the division.

SHELDON E. BEADLE, JR., has been named sales representative of the petrochemicals department of Gulf Oil Corp., and **ARNOLD G. ANDERSON** has been assigned to the commercial research section of

that department. Both will have offices in Pittsburgh. Beadle will be engaged in sales development of Gulf's line of petrochemicals. He has been in the commercial research section at Pittsburgh, since 1956. In his new capacity, Anderson will be responsible for market research and market development of petrochemicals. Anderson joined Gulf in 1942 at the Research Center in Harmarville, Pa., where he engaged in design and economic studies in petrochemical process research projects.

G. W. FERGUSON was named technologist in the Los Angeles office of The Texas Co.'s research and technical department. He was formerly on the staff of the manager of technical services at the Texaco Research Center, at Beacon, N. Y.

K. D. BOWEN has resigned as vice-president and general manager of Texas Butadiene & Chemical Corp., Houston, to devote full time to his private business. Bowen joined Texas Butadiene in 1955, as vice-president and general manager to undertake the staffing of the company and to supervise the construction of its plant.

DR. RAYMOND L. BETTS has been appointed research associate of Esso Research & Engineering Co., Linden, N. J. Betts, with Esso Research since 1937, is presently engaged in process information research in the company's technical information division. Before that, he was engaged in asphalt research in the process research division.

RALPH E. JOHNSON was named terminal foreman at Woods Cross, Utah, for Pioneer Pipe Line Co., affiliate of Continental Oil Co. and Sinclair Pipe Line Co. He was formerly terminal foreman at Amboy, Ill., for Continental Pipeline Co.

LEONARD W. ROBBIE has been elected vice-president of plant operations for Texas City Refining, Inc., in Texas City. He was formerly vice-president and general manager of Republic Oil Refining Co., also in Texas City. He has also been a director of Republic, president and a director of Duval Gasoline Co., and vice-president of Plymouth Pipe Line Co.

P. G. Drew

E. A. Cunningham

P. G. DREW has been named manager of Shell Oil Co.'s Portland (Ore.) marketing division, and **EDWARD A. CUNNINGHAM** manager of the company's Albany (N.Y.) marketing division. Drew, most recently on special assignment with the staff of the vice-president in charge of West Coast marketing, succeeds **G. V. Birkinshaw,** who is retiring. Previous to his special assignment on the West Coast, Drew was special assistant to the manager of the head office marketing departments, in New York. Cunningham succeeds **C. A. Foster, Jr.,** who has been named marketing vice-president of Shell Oil Co. of Canada, Ltd. Cunningham was named sales manager at Baltimore in 1949, and in 1951 he became division manager there. **H. S. Eustis,** most recently assistant to the general manager of Shell's head office marketing departments in New York, succeeds Cunningham as Baltimore division manager.

W. F. DeVOE, manager of LP-gas sales for Phillips Petroleum Co., Bartlesville, Okla., was elected president of the National LP-Gas Council, on Oct. 10. **Frank Carpenter,** president of United Petroleum Gas Co., Minneapolis, was elected chairman of the executive committee, and **James F. Donnelly,** assistant to the executive vice-president of A. O. Smith Corp., Milwaukee, was named treasurer. DeVoe succeeds **E. Carl Sorby,** vice-president of Geo. D. Roper Corp., Kankakee, Ill., who becomes chairman of the council's advisory board.

A. R. SANBORN was appointed commercial accounts manager of Atlantic Refining Co., in Philadelphia. Sanborn, formerly manager of the Philadelphia district, succeeds **F. C. Bowman,** who has moved to Reading, Pa., as manager of wholesale marketing for the company's eastern Pennsylvania region. Bowman succeeds **J. L. McAndrews,** who has become district manager in Reading. **J. J. Conway** was appointed sales group manager of the eastern Pennsylvania region, replacing **R. W. Engle,** who recently transferred to Pittsburgh.

LEE N. HAUGEN has become vice-president, general manager, and a director of Cities Service Research & Development Co., New York. He was most recently vice-president and general manager of Cit-Con Oil Corp. He has also served as general superintendent of refining for Cities Service Oil Co.

JACK HINCKLEY and **A. D. BARNES, JR.,** both engineers, have joined Stekoll Petroleum Co.'s technical staff, in Dallas. Hinckley, with ten years' experience as an engineer in Oklahoma, Louisiana, and the Rocky Mountain states, will be in charge of Stekoll's properties in the Texas Panhandle field. Barnes, formerly district engineer in Oklahoma City for a major oil producer, will supervise the West Texas area. **L. E. Buzarde, Jr.,** has joined Stekoll as geologist for Canadian operations, with headquarters in Dallas. Buzarde, formerly log analyst for a major oil company in Dallas, will also handle log analysis for Stekoll. **James Urice,** geologist, has also been assigned to Canadian operations, also in Dallas. The four men will work under **Art Woerheide,** Stekoll Petroleum's chief engineer.

D. K. MacDOUGALL is manager of real estate for the Southern division of Richfield Oil Corp., with offices in Los Angeles. He was formerly associated with Richfield's Northwest division, at Seattle.

J. T. Wolfe

L. T. Potter

J. THEODORE WOLFE, president of Baltimore Gas & Electric Co., Baltimore, Md., has been elected president of the American Gas Assn., and **LESTER T. POTTER,** president of Lone Star Gas Co., Dallas, succeeds him as second vice-president of the association. Wolfe has also served as a member of AGA's board and executive committee, and as chairman of the executive safety committee. Potter is a member of AGA's laboratories management committee. **Wister H. Ligon,** president and director of Nashville Gas Co., Nashville, Tenn., was elected first vice-president of the association, and **Vincent T. Miles,** treasurer of Long Island Lighting Co., Mineola, N.Y., was elected treasurer.

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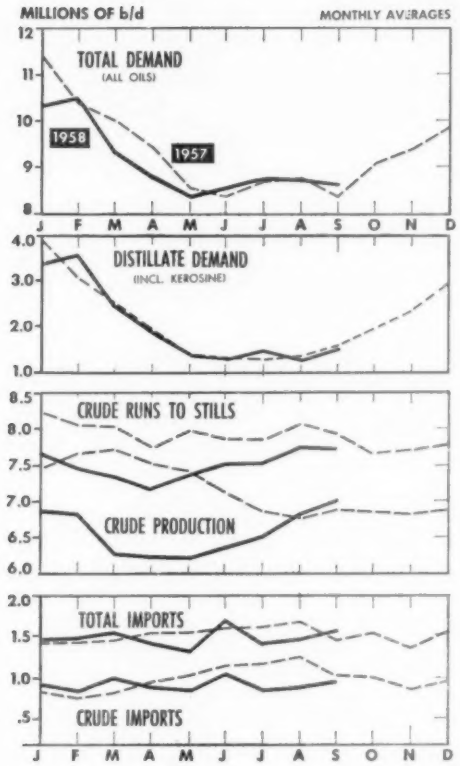
PETROLEUM WEEK'S

Fingertip Figures



TOTAL DEMAND

Latest 4-week average	9.174
Year ago	8.973

DISTILLATE DEMAND

Latest 4-week average	1.722
Year ago	1.866

RUNS TO STILLS

Latest week	7.753
Previous week	7.613
Year ago	7.649

CRUDE PRODUCTION

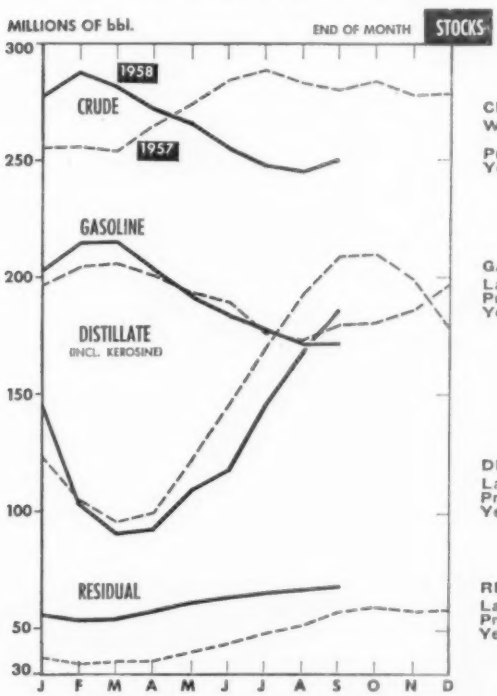
Latest week	6.919
Previous week	6.893
Year ago	6.766

TOTAL IMPORTS

Latest week	1.426
Previous week	1.520
Year ago	1.550

CRUDE IMPORTS

Latest week	.782
Previous week	.928
Year ago	1.001



CRUDE STOCKS

Week-ended 10-18	254.0
Previous week	252.3
Year ago	284.9

GASOLINE

Latest week	168.4
Previous week	170.4
Year ago	179.3

DISTILLATES

Latest week	195.8
Previous week	192.9
Year ago	210.5

RESIDUAL

Latest week	67.9
Previous week	68.0
Year ago	59.5

The industry continues to improve its inventory position, particularly gasoline. Motor fuel stocks now are at the lowest level since the end of 1956.

Residual fuel stocks continue heavy, but the industry's big worry stock-wise most of the year has been its "money" product —gasoline.

Since early September, gasoline stocks have been running under the 1957 levels. But they were still considered on the high side—particularly in view of the anticipated winter build-up.

But reduced runs—not reduced gasoline yield rates, which still average higher than 50% of refinery runs—and a stronger demand than a year ago have trimmed gasoline inventories to 168.4-million bbl. That is 10.9-million bbl. under a year ago, the largest year-to-year "underage" in more than 12 months.

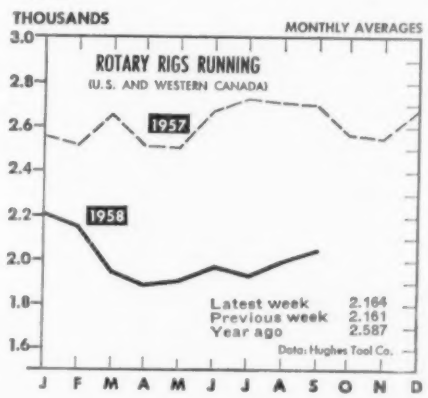
Distillates stocks are getting close to the 1957 position, and are now above what industry officials have estimated to be an "adequate" position.

An adequate inventory position on distillates (including kerosine) on Nov. 1 would be 189.7-million bbl., according to the average of the recommendations of companies testifying before the Texas Railroad Commission last March.

The current distillates inventory of 195.8-million bbl. is only 14.7-million bbl., under a year ago.

The real concern so far over the distillates inventory position has been that the possibly high level of refinery runs needed to make heating oils this winter would cause unnecessary additions to gasoline inventories.

But regardless of product stock positions, refiners historically base their operating rates on crude availability—as witness last week's 140,000 b/d jump in refinery runs.



The Market Trend

A U.S. Independent Breaks into Brazil

U. S. independents are beginning to make themselves heard in international markets for crude oil. This is a departure from tradition. For many, many years, international suppliers have furnished most of the crude in world trade.

Shipments are starting this week from a "new" Venezuelan producer to Brazil. By the end of the year, the volume of the movement will run to nearly 1-million bbl.

The supplier reportedly is Superior Oil, selling crude from its concession in Lake Maracaibo. The price for this "Lake" crude is said to be well below $2.25 a bbl., and possibly as low as $2.00—a discount of perhaps 45¢ to 50¢ a bbl. Considering the season, Brazil got a good deal on transportation, too, chartering tankers at rates ranging from USMC —45% to USMC —47½%.

The deal had to be an ingenious one because of Brazil's exchange limitations. In this respect, the supplier took a leaf from the international trader's notebook. Brazil is short on dollars, but can pay in Danish kroner. The supplier is accepting kroner, and in turn will use this currency to buy offshore drilling equipment.

The deal was helped along, too, by a temporary shutdown of the Bahia crude oil fields in Brazil. Production from these fields is too waxy for local use. In recent months, Brazil has tried to pressure international companies to take this oil in partial compensation for crudes more to its liking.

This sale to Brazil is one of the first big break-throughs by U. S. independents in world trade. There has been a trickle of independent Venezuelan crude moving to Israel. However, the Brazil deal represents the first such sale closed in wide-open competition, for many international companies, fearing black-listing of their vessels at Arab ports if the tankers call at Israel, did not bid on the Israeli business.

Needless to say, there is considerable chagrin at this Brazil deal among the international companies. It is evident that U. S. independents can be resourceful in their approach to new markets.

So watch for some pretty severe rocking of the boat in foreign crude prices. There are lots of independents in Venezuela. They have lots of oil. And they are heavily invested, and want to get some money back.

Gasoline—Two Faces:

All the gasoline reports don't show weakness. True, Chicago prices for truck lots dropped another 0.25¢ last week. But Mid-Continent refiners say that steep discounting has eased—by at least 0.25¢.

Also, cheap offerings of gasoline at mid-Mississippi River points have dried up considerably. The pressure to sell gasoline at the Gulf is not so strong as it was, either.

Chicago No. 6 Oil:

Chicago sellers are very bullish on No. 6 fuel oil. After a long absence, the steel mills are back in the market for barge lots. Fearful of tight supplies, some Chicago terminal operators have entered the Gulf Coast market, buying both low-sulfur and ordinary material. Heavy fuel is strong in the Mid-Continent. Several Kansas and Oklahoma refiners are in the market as buyers, and are finding the pickings lean.

The Market Place

AROUND THE WORLD

Prices compiled for PETROLEUM WEEK by Platt's OILGRAM Price Service and National Petroleum News, McGraw-Hill Publications

All prices as of October 27

Bold face type indicates changes from previous week

KEY PRICES—REFINED PRODUCTS

(¢ per gal. except dollars per bbl. where $ is shown)

Western Hemisphere

U.S. Gulf Coast, cargoes
- **Gasoline, 98 oct prem ... 11.75-12.75↓**
- Gasoline, 92 oct reg ... 10.5-11.5
- Kerosine ... 9.125
- Heating oil, No. 2 ... 8.625-9
- Gas oil, 48-52 d.i. ... 8.875-9.5
- Fuel oil, bunker "C" ... $2.00-2.10

Caribbean, cargoes
- Avgas, Grade 100/130 ... 16
- Gasoline, 93 oct research prem ... 10.75
- Gasoline, 87 oct research reg ... 9.875
- Gasoline, 79 oct research ... 9.125
- Gasoline, 70-72 oct motor method ... 9
- **Kerosine ... 9.375↑**
- Heating oil, No. 2 ... 8.625
- Gas oil, 48-52 d.i. ... 8.875
- Fuel oil, bunker "C" ... $2.00

New York Harbor, barges
- Kerosine ... 9.95-10.2
- Heating oil, No. 2 ... 9.45-9.7
- Fuel oil, No. 6 ... $2.37-2.45

Okla-Group 3, northern shpt., bulk
- **Gasoline, 89 oct reg ... 11.625-12.375↓**
- Kerosine ... 10-10.5
- **Heating oil, No. 2 ... 9-9.5↑**
- Fuel oil, No. 6 ... $1.40-1.50

Chicago, bulk
- **Gasoline, 91 oct reg ... 11.25↓**
- Heating oil, No. 2 ... 9.5-11.35
- Fuel oil, No. 6 high sulfur ... 6.9-7

Los Angeles, rack
- Gasoline, 88 oct reg ... 12.25-13.6
- Diesel fuel, PS 200 ... 10-11.25
- Light fuel, PS 300 ... $2.80
- Heavy fuel, PS 400 ... $2.15-2.35

Natural Gasoline, Grade 26-70
- FOB Group 3 ... 4.5
- FOB Breckenridge, Tex. ... 4

LP-Gas
- Propane, Oklahoma (Group 3) ... 5

Pennsylvania Lubes
- Bright stock, 25 p.t. ... 22
- 200 vis. neutral, 25 p.t. ... 21

Mid-Continent Lubes, Tulsa basis
- Bright stock, solvent, 95 v.i. ... 23-24
- Neutral, solvent, 200-210 vis. ... 19.5-20.5

Gulf Coast Lubes
- Bright stock, solvent, 95 v. i. ... 24
- Neutral, solvent, 200 vis. ... 20.5

Eastern Hemisphere

Singapore (Pulau Bukom), cargoes
- Avgas, grade 100/130 ... 17.25
- Gasoline, 79 oct research ... 10.375
- Kerosine ... 10.375
- Gas oil, 48 d. i. minimum ... 10.25

KEY PRICES—CRUDE OIL

(2¢ differential per deg. of grav. applies except at noted)

Western Hemisphere

United States (at the well)
- Mid-Continent, 36.0-36.9 ... 2.83-3.07
- North Dakota, 36.0-36.9 ... 2.62-3.07
- Texas:
  - Gulf Coast, low cold test, 26.0-26.9 ... 3.50
  - Gulf Coast, Upper & Lower, 26.0-26.9 ... 2.92-3.22
  - West Texas, sweet, 36.0-36.9 ... 3.00-3.07
  - West Texas, N. M., inter., 36.0-36.9 ... 3.00
  - West Texas, N. M., sour, 32.0-32.9 ... 2.86
  - East Texas, flat ... 3.25
  - Mirando, 28.0-28.9 ... 3.31
- Illinois Basin, flat ... 3.00
- Pennsylvania Grade, Bradford dist., flat ... 3.90
- California, Signal Hill, 21.0-21.9 ... 2.50†
- North Louisiana-Arkansas, 36.0-36.9 ... 2.82-3.02
- Wyoming, sweet, 36.0-36.9 ... 2.90-3.00
- Wyoming, sour, 32.0-32.9 ... 2.71

Canada (flat prices, at the well)
- Acheson-Stony Plain (Alta.) ... 2.61
- Leduc-Woodbend (Alta.) ... 2.67
- Redwater (Alta.) ... 2.56
- Daly (Man.) ... 2.39
- Smiley (Sask.) ... 2.33

Venezuela (Cargoes, FOB lifting port designated)
- Cumarebo, 48.0-48.9, Tucupido ... 3.75
- San Joaquin, 41.0-41.9, Puerto la Cruz ... 3.34
- Oficina, 35.0-35.9, Puerto la Cruz ... 3.05
- Tia Juana, Medium, 26.0-26.9, Amuay ... 2.55
- **Bachaquero, flat, Las Piedras ... 1.78-1.93↓**
- Tarra, 38.0-38.9, San Lorenzo ... 3.08
- Lagunillas Heavy, flat, Cardon ... 2.10

†*Differential per deg. of grav. varies.*

Eastern Hemisphere

Middle East, Persian Gulf (Cargoes, FOB lifting port)
- Arabia, 34.0-34.9, Ras Tanura ... 2.08
- Safaniya, 27.0-27.9, Ras Tanura ... 1.65
- Iran, 34.0-34.9, Bandar Mashur ... 2.04
- Iran, 34.0-34.9, Abadan ... 1.99
- Iraq, 35.0-35.9, Fao ... 1.98
- Kuwait, 31.0-31.9, Mina-al-Ahmadi ... 1.85
- Qatar, 41.0-41.9, Umm Said ... 2.23
- Neutral Zone, Burgham, 23.5-24.4, Mina Saud ... 1.61
- N. Zone, Eocene-Ratawi, 20.5-21.4, Mina Saud ... 1.43

Middle East, Eastern Mediterranean
- Arabian, 36.0-36.9, Sidon ... 2.49
- Iraqi, 36.0-36.9, Tripoli, Banias ... 2.49

Far East, Cargoes, FOB Lutong, Sarawak
- Seria Light, 37-38 ... 2.75

KEY TANKER RATES

(Last paid, per long ton, single voyage)

U.S. Gulf-New York, clean (USMC —10%) $2.57↓
- U.S. Gulf-New York, dirty ... (USMC —10%) $2.57
- NWI-USNH, dirty ... (USMC —50%) $1.35
- NWI-UK/Cont., dirty ... (Scale —50%) 16/3*
- Persian Gulf-UK/Cont., dirty ... (Scale —50%) 30/10*
- Persian Gulf-USNH, dirty ... (USMC —52½%) $6.03

**Sterling.*

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DEPT/Service & Equipment Companies

HERCHEL M. RICHEY has been elected vice-president in charge of manufacturing for the roller bearing and rock bit divisions of Timken Roller Bearing Co., Canton, Ohio. He replaces **A. M. Donze,** who retires as vice-president, but continues as a director of the company. In 1944, Richey was named factory manager of the bearing and rock bit divisions, and in 1954 became general factory manager of the two divisions.

H. M. Richey

A. R. Pitkin

ARTHUR R. PITKIN has been appointed purchasing agent for Tex-Tube, Inc., Houston manufacturer and distributor of oil country tubular goods. Pitkin will be responsible for purchasing all maintenance supplies and raw materials for production.

HOWARD E. STROHMAIER has been appointed general manager of Penberthy Mfg. Co., Detroit, a division of Buffalo-Eclipse Corp., and **ARNOLD N. LINDEMAN** succeeds him as general sales manager for the company. Lindeman was formerly Penberthy's chief engineer. The company manufactures sump pumps, liquid level gauges, valves, ejectors, and related equipment.

CHESTER W. ALLEN, formerly manager of Allen Coring, Ltd., Alberta, is head of an oil well supply firm in Seward, Alaska, set up by Chester T. Allen Co., Bakersfield, Calif. The Seward firm will handle rotary mud, drill bits, and conventional and diamond coring tools.

W. G. HAMILTON, JR., president of American Meter Co., Philadelphia, is also president of Buffalo Meter Co., recently purchased by Buffalo Niagara Industrial Controls, Inc., Buffalo (N.Y.) subsidiary of American Meter. **Russell Wetjen,** who has been with Buffalo Meter, is vice-president and general manager of the new affiliate, and **Herbert F. Barrett** continues as sales manager. Two new Buffalo Meter officers from American Meter are **A. McBeath,** treasurer, and **W. B. Ashby,** secretary.

R. L. CRAWFORD, vice-president of Sterling Tank & Steel Co., is in charge of the company's new Denver branch plant, which will fabricate tanks for service stations, bulk storage, and other industrial uses. The plant will begin operations early in 1959.

W. R. BARRY and **PHILIP L. McLAUGHLIN** have formed a new Dallas consulting firm, known as McLaughlin & Barry. The company offers engineering and marketing consultation services for new products, and the redesign and modernization of products marketed to the petroleum industry. Barry was formerly manager of pump research and development for Cardwell Mfg. Co., in Wichita, Kan., and McLaughlin has been head of Philip L. McLaughlin & Associates, consulting firm in Dallas.

RICHARD CAHILL is president of Campania De Laval Turbina Internacional, S.A., recently formed subsidiary of De Laval Steam Turbine Co., with main offices in Panama City, Panama. The new company will coordinate and promote the sale and servicing of De Laval products throughout the world, except the United States, Canada, Hawaii, and Puerto Rico. **J. P. Stewart** is president and **Richard M. Cueto** sales manager of the Panamanian company's new subsidiary, De Laval Turbina de Mexico, S.A., in Mexico City.

JOHN J. SHEEHAN has been appointed general manager of the international division of Hewitt-Robins, Inc. He replaces the retiring **Harold Von Thaden,** who will continue to serve Hewitt-Robins in a consulting capacity. Sheehan joined the company in 1947 as controller of the Robins Engineers division, in New York. He was appointed assistant to Von Thaden in 1951, and in 1954 became manager of foreign operations. In his new position, Sheehan will be responsible for the company's export department in New York, and for subsidiaries and affiliates in Canada, Great Britain, Holland, France, and South Africa.

W. P. Schultz

H. M. Shearin

H. M. SHEARIN has been appointed assistant manager in charge of domestic studies, and **W. P. SCHULTZ** assistant manager in charge of foreign studies, for the engineering and consulting department of Core Laboratories, Inc., Dallas. Both men came to Core in 1955 from Humble Oil & Refining Co., Houston.

BART DeLORENZO and **WILLIAM G. WHITE,** of Barth Engineering Co. Oakland, have been named sales representatives in California for the Buflovak Equipment Division of Blaw-Knox Co. DeLorenzo, with Barth Engineering since 1956, was formerly associated with Rodman & Co., Brown Fintube Co., and Foster

Wheeler Corp. White joined Barth Engineering in 1957, after previous associations with Johns-Manville Co. and Fibreboard Paper Products Corp. The two men will be responsible for the sales of Buflovak's line of chemical and processing plant equipment.

DON V. STONE has been appointed manager of the Kelley Ripper division of Crutcher-Rolfs-Cummings, Inc., Houston. The division was organized to serve in the promotion and sales of rippers for mining, quarrying, and pipeline work through Caterpillar dealers' international organization. Prior to his new appointment, Stone was engaged in sales work for Caterpillar Tractor Co., and for the Euclid division of General Motors Corp.

D. V. Stone

C. Caldwell

CHARLES (Pete) CALDWELL was appointed assistant general manager of the Texas division of Clevite Corp., in Houston. He will retain his responsibilities as sales manager, a position he has held since 1956. Clevite is a manufacturer of geophysical instruments and electronic systems.

JACK M. ANDERSON has become division office manager for Hughes Tool Co. in Oklahoma City. He was formerly located at Hughes' office at Ardmore, Okla.

DONALD P. FLYNN has been elected assistant vice-president of the Republic National Bank of Dallas. In his new position, Flynn will be associated with Republic's national accounts division. He was formerly assistant vice-president in the national corporate accounts division, and a commercial loaning officer, of the First National Bank & Trust Co. of Tulsa.

LAWRENCE E. NELSON has been named vice-president of sales for the Marine & Industrial Engine Division of Chrysler Corp., Detroit. He has been with Chrysler Motors Corp. as director of the marketing staff, and more recently, as director of vehicle sales. Nelson succeeds **C. C. Williams**, who has become divisional vice-president of Chrysler's Marine & Industrial Engine Division.

GEORGE GARRETT was named chief engineer of Rector Well Equipment Co., Fort Worth, succeeding **CHARLES ZARTMAN**, who continues as assistant to Rector's president. Garrett was formerly a development engineer for the company. **John L. Curry** was named to the newly created position of sales coordinator. He has been sales manager of Rector's cementing equipment division since 1952. In his new position, Curry will coordinate the efforts of salesmen, as well as act as liaison between the Fort Worth office and the field.

PAUL DEARING is manager of Industrial Instrument Corp.'s new West Texas division, recently opened in Odessa. Dearing has been with Industrial Instrument for the past five years.

DON VOSSEN was named sales representative in Kansas for Hale Mfg. Co., Tulsa. He will work with **C. J. Baeten** in maintaining sales and service on all items manufactured by Hale. Baeten has represented Hale in Kansas for the past 20 years.

C. C. B. MOODY has been named assistant to **M. B. Riordan,** vice-president of engineering and development for BJ Service, Inc. Moody will be engaged in research and development activities at BJ's offices in Long Beach, Calif., and Breckenridge, Tex. Moody, with BJ since 1948, was most recently executive assistant to **W. T. Box**, vice-president and manager of operations. BJ Service is a subsidiary of Borg-Warner Corp.

C. E. MILLARD, JR., was named manager of Jones & Laughlin Supply Division's Clarksburg (W. Va.) store. Millard joined J & L in 1946, and served most recently as J & L's storeman at Canton, Ohio.

I. R. FILIPPONE has been named vice-president and director of sales for Amco Corp., international distributors of equipment for petroleum handling and marketing, and for general industrial use. Filippone will have two offices: with the New York division, and at the company's general office in Chicago. **C. R. Gates,** Amco vice-president, has been named a director of the company. He is also vice-president and eastern representative of Ardmore Products, an Amco division.

BILLY JOE NICHOLS has been named manager of the new Liberal (Kan.) branch office and warehouse recently opened by the Union Tank Division of Butler Mfg. Co. Nichols has been with Union Tank since 1957.

B. J. Nichols

C. J. Spivey

C. J. SPIVEY has joined Petty Geophysical Co., San Antonio, in its foreign exploration department. He was formerly manager of Venezuelan operations for Geophysical Service Inc., Dallas.

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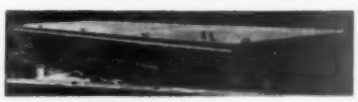

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Common Sense Can Aid Conservation

THE OIL INDUSTRY HAS FREQUENTLY been caught in the crossfire of conflicting rules and regulations. Sometimes conflicting regulations of different federal agencies are involved. On other occasions, there is a conflict between the federal and state governments.

But now a conflict has arisen that involves two kinds of crossfiring at once—a conflict between the federal government and the state of Utah, and one between the Interior Dept. and the Federal Power Commission.

The first conflict is one over the right to regulate oil and gas production on federal and federal-administered Indian lands that lie within state boundaries. In this particular case, the Navajo Tribal Council, which is on record as stating that it does not recognize the authority of the Utah Oil & Gas Conservation Commission to regulate production on its lands, asked Interior to shut down production due to gas flaring.

The Navajos, however, would like the Utah commission to order a similar shutdown on leases surrounding the Indian lands, to prevent drainage.

THERE IS NO QUESTION that Interior has the authority to order a shutdown when waste is involved. The only thing that has prevented such conflicts in regulatory control until now is that Interior has left conservation regulations up to the various state conservation agencies.

But indications now are that the federal government will keep a closer check on conservation procedures on federal lands, moving in directly when it feels such action is needed.

The conflict over conservation regulations in southeastern Utah involves flaring of gas in an area that so far has no gas pipeline outlet. El Paso Natural Gas Co. is nearing completion of a line into the area to transport gas to California. But certification by FPC is being held up due to an objection raised by the California attorney general over the 20¢ per thousand cu. ft. field price for gas offered by El Paso.

CONFLICTS IN CONSERVATION RULES could increase with the rise in leasing of federal lands. In some cases—especially federal lands offshore—such conflicts will be difficult to resolve. The problem of gas flaring at distant offshore locations, for example, could be a complicated one.

A common sense approach seemingly would be for the various federal and state agencies involved to study all the ramifications of such problems before they arise and then practical regulations could be set to prevent waste.

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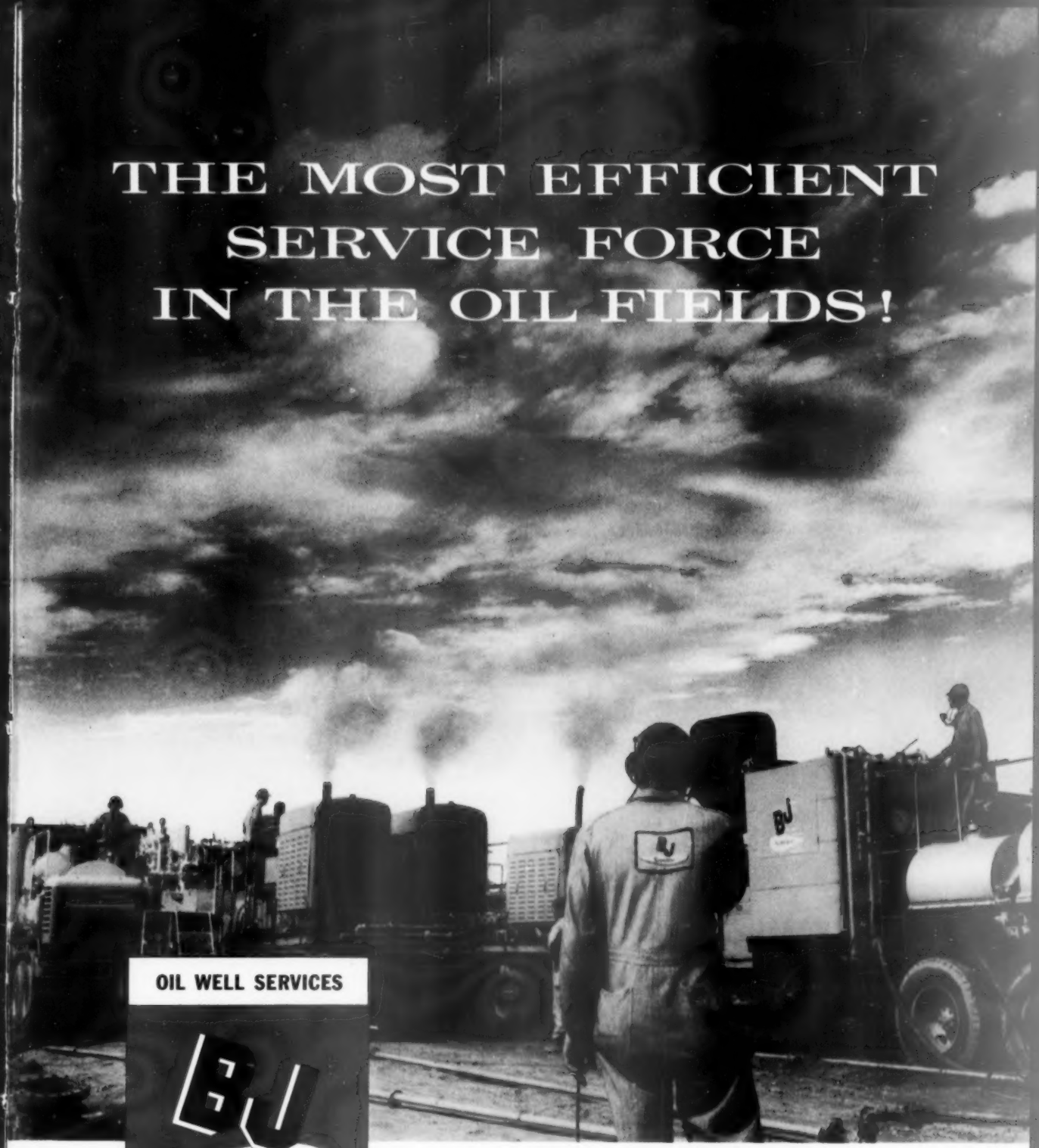

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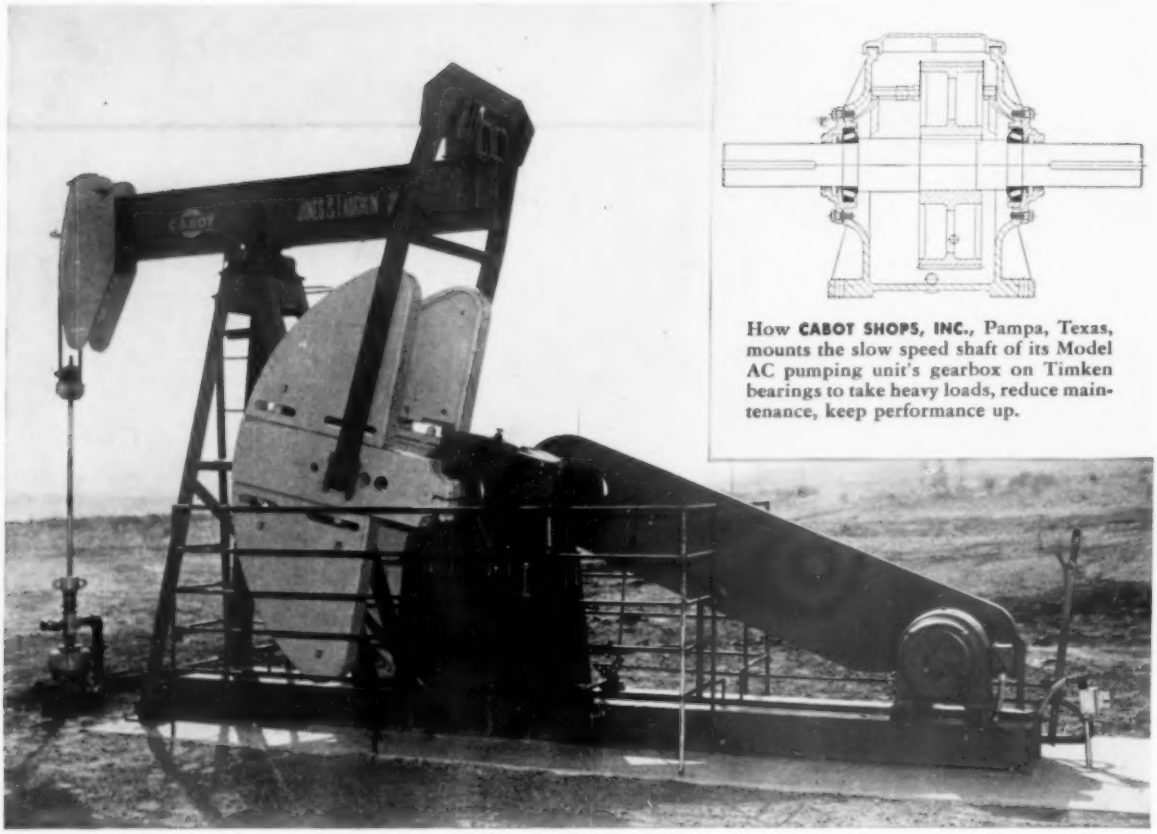

How **CABOT SHOPS, INC.**, Pampa, Texas, mounts the slow speed shaft of its Model AC pumping unit's gearbox on Timken bearings to take heavy loads, reduce maintenance, keep performance up.

How TIMKEN® bearings on slow speed shaft keep pumping unit going in high

IN designing this Model AC pumping unit, Cabot Shops, Inc., faced some tough bearing problems for the reducer's slow speed shaft. Because Cabot reducers have herringbone gears, the bearings must position all shafts. And the bearings on the slow speed shaft must take heavy radial loads. What's more, this equipment must run for years with little attention, making it vital for the bearings to be practically maintenance-free.

To solve all these problems, Cabot engineers specified Timken® tapered roller bearings for the slow speed shaft. The tapered construction of Timken bearings lets them take *both* radial and thrust loads in any combination. And full line contact between rollers and races gives Timken bearings extra load-carrying capacity. Result: end play is minimized. Shafts are held in correct alignment. Gear wear is cut. The pumping unit works steadily, economically.

And because Timken bearings hold housings and shafts concentric, bearing closures are more effective. Lubricant stays in. Dirt and moisture stay out. Lubrication costs stay down.

Another big reason Timken bearings stand up so well is that they're made of electric furnace Timken fine alloy steel. A further guarantee of highest quality. We're America's only bearing manufacturer that makes its own steel.

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